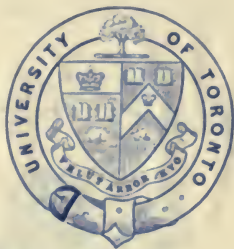




3 1761 06707537 4



Presented to
The Library
of the
University of Toronto
by
The estate of the late
Mrs. Marie Remon

Donaldson
m

Digitized by the Internet Archive
in 2007 with funding from
Microsoft Corporation

Bot
Flora

4
UNDER THE SUPERINTENDENCE OF THE COUNCIL OF
THE NATURAL HISTORY SOCIETY.

A FLORA
OF
LIVERPOOL,

BY
T. B. HALL,

WITH AN ENGRAVED MAP;

(map missing)

AND

An Appendix,

CONTAINING

METEOROLOGICAL TABLES & OBSERVATIONS

FOR THE YEAR 1838,

BY

WILSON ARMISTEAD.

LONDON:

WHITAKER & CO., AVE MARIA LANE.

LIVERPOOL: WALMSLEY, CHURCH STREET; AND T. HODGSON, LORD
STREET.

Price 6s.—If procured of the Members of the Liverpool Natural
History Society, 5s.

376254
29.2.40

R. THOMPSON, PRINTER,
LITTLE JAMES STREET, GRAY'S INN LANE.

ABBREVIATIONS.

⊙ Annual. ♂ Biennial. ⊙ Perennial.
 h Arboreous, or Shrubby.

Bart. or Baxter. Baxter's Flowering Plants.

B. G. Botanists' Guide, by Turner and Dillwyn.

E. B. or Eng. Bot. Sowerby and Smith's English Botany.

Fl. Dan. Flora Danica.

Fl. Lond. Curtis's Flora Londinensis.

Hook. or Hooker. Sir William Jackson Hooker's British Flora.

J. S. in Herb. The late Mr. J. Shepherd's localities in the Herbarium
at the Liverpool Botanic Garden.

New. Bot. Guide. New Botanists' Guide by H. C. Watson.

Sm. Sir J. E. Smith's English Flora.

Sp. Species.

With. Withering's Arrangement of British Plants. Seventh Edition. 1830.

P R E F A C E.

THE arrangement of the Genera in the following work is according to the Catalogue published by the Rev. Professor Henslow.* The only alteration that I have made, is in the terminations of the orders, in which respect I have followed Professor Lindley, in making the orders, wherever practicable, to end in *aceæ*, and the sub-orders in *æ*, which plan I consider to be worthy of general adoption. The names of the Genera and Species are the same as in Sir W. J. Hooker's British Flora, that work being generally used by botanists in this country. The times of flowering are also supplied from the same work; and although they are doubtless in many cases erroneous, I thought it better that they should be inserted; and notwithstanding it would be a great advantage, in a Local Flora, to supply a correct list of the times of the flowering of every species, it would

* A Catalogue of British Plants, arranged according to the Natural System, with the Synonymes of De Candolle, Smith, Lindley and Hooker. By the Rev. J. S. Henslow, M.A. Professor of Botany in the University of Cambridge. J. and J. J. Deighton, and T. Stephenson, Cambridge; and Rivingtons and Hatchards, London.

require many years of very careful observation to effect that object.

I have placed the Lancashire localities first, and for those in the neighbourhood of Bootle I am principally indebted to Mr. R. Tudor, in whose company I have had the pleasure of seeing most of the plants mentioned as growing about there, or along the north shore of Liverpool. To Dr. Dickinson I am under obligation for much valuable information, as that gentleman kindly placed at my disposal a Manuscript List of British Plants, arranged according to the Natural System, with the localities personally observed by him during the Summer of 1838, as well as those which were furnished to him by the pupils of the medical school, a specimen of the plant being in all cases seen by Dr. Dickinson. Mr. H. C. Watson has supplied me with his observations on the plants occurring in the Hundred of Wirral, from occasional visits which he made to Liverpool; and I have also availed myself of the information contained in his *New Botanist's Guide*,* a work which ought to be in the hands of every practical botanist. I have placed the name of Mr. Watson against the localities given to me by that gentleman, and those extracted from his Guide have the authority, with *New Botanical Guide* after them; in one or two instances, B. G. follows the locality, which signifies the *Old Botanist's Guide*, by Turner and Dillwyn.

My own observations relate more particularly to the Hundred of Wirral, principally about Woodside, and in

* The *New Botanist's Guide to the Localities of the rarer plants of Britain*; on the plan of Turner and Dillwyn's *Botanist's Guide*. By Hewett Cottrell Watson. Vol. 1. England and Wales. Vol. 2. Scotland and adjacent Islands. London: Longman and Co., Paternoster Row.

the direction towards the sea. For many of these localities I am indebted to Mr. A. Stewart, and I have gained some interesting information by inspecting the Herbarium of Mr. Wilson Armistead. I have not much explored the country about Eastham, but some rarities were found in the neighbourhood of Sutton, by Mr. R. Slack, who diligently botanized over that part of Cheshire. The places which I consider would be the most likely to yield novelties, and which, from what I can learn, have been very little visited by Liverpool botanists, are the mosses in the neighbourhood of Knowsley, and about Kirkby. In Cheshire there remains a fine field about Hoylake, West Kirby, Irby Heath, and along the shores of the Dee, which in some measure partake of the character of the Welsh Flora, as may be seen by some of the plants which occur near Parkgate, and which are extracted from a list furnished to me by Miss E. Potts, of Chester.

To Mr. Henry Shepherd I am indebted for much valuable information; and shall always hold in remembrance his kindness in furnishing me with every assistance in his power, during the time that I was inspecting the Herbarium at the Botanic Gardens. By these latter means I have availed myself of all the information relating to the plants collected by the late Mr. J. Shepherd,* who for many years explored the north and south shores of Liverpool; but that information is rendered less valuable by the remoteness of the date of the localities, some having been collected so far back as 1801, and most of them about 1814. Owing to the rapid increase of the town of Liver-

* The late Mr. Shepherd and Dr. Bostock contributed several localities for plants in the neighbourhood of Liverpool, to Withering's Arrangement of British Plants, some of which I have availed myself of.

pool, several of the localities where the plants were gathered, are now covered with docks or buildings. Mr. H. Shepherd informed me that *Trifolium fragiferum*, *Genista anglica*, and many other plants, which are now not found nearer than Bootle, used to commence where the Prince's Dock now is. In going through the Herbarium, I have availed myself of such of Col. Velley's notes as I could prefix to the plants which occur about Liverpool, and I trust that they will not be found devoid of interest. I have also inserted notes from various other sources, to relieve the sameness of a mere catalogue of plants, and to give the subject some little additional interest.

One or two very interesting discoveries are inserted, on the authority of Mr. Murray, of the Botanic Gardens; and I am also indebted to him for information connected with the Herbarium there. Mr. William Wilson, of Paddington, near Warrington, kindly supplied me with a list of rare plants occurring in Lancashire and Cheshire; but, with very few exceptions, they are beyond the range of this work, the distance exceeding ten miles. From the same cause I am unable to avail myself of the list published in the Guide to Southport,* a work that will be found of great use to any persons visiting that place. There is another work, which will be also found useful to botanists, connected with this county (Lancashire). It is entitled "A Calendar of Flora, composed during the year 1809, at Warrington, lat. 13 deg. 30 min., by G. Crosfield,

* A Concise History and Description of Southport, a fashionable watering place, situate in North Meols, in the county palatine of Lancashire, together with a Tide-table and Directory. Southport: printed and sold by William Alsop, 5, Gore's Terrace.

Secretary to the Botanical Society of Warrington."* It consists of a list of the wild plants growing about Warrington, with the introduction of some of our native plants, which are commonly cultivated in gardens, and has the time of flowering prefixed to each species, deduced from personal observations. The plants have occasionally notes prefixed to them, from the pen of Dr. Kenrick, F. L. S.

The terms *common*, *frequent*, *rare*, &c. which I have used to denote the abundance or scarcity of any plant, are in general use among botanists; but as my own observations have necessarily been limited, some allowance must be made for any occasional misapplication of terms. Further observation may prove some plants to be common, which at present may only have been observed in a few localities. With the assistance of Dr. Dickinson and Mr. Tudor, I have endeavoured to give more accurate information on this head, in the index, by prefixing the same signs as are used by the Edinburgh Botanical Society, an explanation of which will precede the Index.

I have thought it advisable to notice those plants which occur very rarely, and under suspicious circumstances, so as evidently to have been merely the outcast of a garden; but they are printed in the same type as the notes. Additional observations may probably prove some of these to be more frequent, in which case some botanists will consider that they ought to be included like the rest. I have likewise mentioned plants, the occurrence of which I consider requires confirmation; and, in some instances, I have mentioned one or two species which are now thought

* Warrington: printed by J. Haddock. Sold also by Wilkie and Robinson, Paternoster Row; and White, Fleet Street, London.

to be extinct. I have not been anxious unnecessarily to swell the present catalogue, so as to make it numerically large; but my object has been to make it as complete as possible, and to show those persons who may wish to investigate the Botany of the neighbourhood of Liverpool, what plants they may expect to find; and, in one or two cases, I have mentioned in a parenthesis such of the common species of a different genus, as an experienced botanist would most probably find. The map, which is engraved by Messrs. I. and C. Walker, on the scale of an inch to the mile, will, I trust, be found of very great assistance in determining the localities of any plants that may be discovered in future. It may be as well to mention, that the orthography of names of places varies very much. Speak and Wallasey, and various other names, are spelt in different ways, in the various maps and county histories which I have consulted.

The present work concludes with the ferns and their allies, and the order *Characeæ*. I contemplated at one time giving the orders *Musci* and *Algæ*; but I consider it advisable to wait till other botanists have accumulated additional observations on the species contained in these orders. If it is found necessary, a supplement may be published, containing also any additional observations that may be made on the phænogamous plants. I have also some few localities for shells, in the neighbourhood of Liverpool, partly made on my own observation, and partly supplied to me through the kindness of Mr. Thomas Glover, of Manchester, which can also be included in the supplement; in which case they will, no doubt, prove equally interesting to any resident conchologist. These

localities were published, in a condensed form, in the 21st number of "The Naturalist" for June, 1838, since which time I have made several additions to my list of the land and fresh-water shells.

ON THE
GEOLOGICAL FORMATION
OF THE
NEIGHBOURHOOD OF LIVERPOOL.*

THE town of Liverpool is situated in north latitude 53 min. 23 deg. and in west longitude 2 min. 59 deg. It is distant about three miles from the sea, and stands on the Mersey, which forms a broad arm or estuary of the sea, extending inland about twenty miles, as far as a thriving village called Runcorn. This estuary is about a mile broad opposite the town; but in proceeding more inland its breadth is much more considerable. This peculiarity of shape is of great advantage to the Port of Liverpool; in consequence of so large a body of water passing and repassing the town every tide, the navigation of the Mersey is always kept open.

The whole of the district round Liverpool belongs to the new red sandstone formation, and is situated in that peculiar division of it called the variegated sandstone. Of the new red sandstone group, the saliferous marls, the magnesian limestone, and the lower red sandstone are absent,

* This paper was kindly written for this work by the Rev. Thomas Dwyer, M.A.

and the variegated sandstone rests, in this part of the kingdom, immediately upon the coal measures. These last come to the surface, and crop out from under the new red sandstone, at about seven miles from Liverpool, at the town of Prescot. It is generally supposed that the new red sandstone of Liverpool, and of the hundred of Wirral in Cheshire, rests upon and fills up a large basin formed by the coal measures. The western boundary of these coal measures come to the surface, and are extensively worked in the county of Flint, where they rest upon the eastern flank of the mountain limestone. The strata of new red sandstone, which occupy and fill up this extensive basin, lie unconformably with the inferior coal measures. The new red sandstone is nearly horizontal, with a general dip towards the East; whereas the underlying coal measures dip in various directions, and in one particular locality near Mostyn, in Flintshire, where the coal measures immediately abut the mountain limestone, the coal measures are thrown up at an angle of upwards of 45 degrees. The new red sandstone rock, in the district surrounding Liverpool, is not invariably of a red colour; but it has acquired its name from its prevailing colour, when viewed on a large scale, being found to be various shades of red. Sometimes some portions of the sandstone may be observed to be almost pure white, sometimes various shades of yellow, and very frequently yellow and white intermixed with red, and hence this peculiar division of the new red sandstone formation has acquired the name of the *variegated sandstone*. The new red sandstone in its composition seems to have resulted from the wearing down and disintegration of older rocks, and the numerous pebbles imbedded in it show these rocks to have been chiefly those of primary formation.

The texture of the sandstone is that of fine grains of quartz and feldspar cemented together by argillaceous matter, origination in the decomposition of the feldspar. There is also a great deal of oxide of iron, to which its variety of colour is owing.

When we come to consider the circumstances under which the new red sandstone has been deposited, we may easily conceive that they have been unfavourable for the preservation of organic remains. The forces which could wear down and comminute the hardest rocks into grains of sand and particles of mud, would be not likely to leave undestroyed the more delicate fabric of organised beings. There have, however, occurred one or two remarkable exceptions; the first is in the preservation of the footsteps of various unknown animals in the sandstone of the Storeton Hill quarries. These quarries are situated in the Peninsula of Wirral, at about two miles distant from a ferry on the river Mersey, called Rock Ferry. Storeton Hill is the last of a low range of hills, extending from the mouth of the Mersey as far as Storeton. The most considerable of these in elevation is Bidston Hill, being about 250 feet high.

The range of hills just mentioned appear to be of contemporaneous formation, being remarkably distinguished for a broad band or belt of yellow and white sandstone, which passes through all of them. It is on the upper surface of the beds of this sandstone that the fossil footsteps occur. During the period of time in which the formation of this rock was going on, there seems to have been a flood or flush of water, bearing with it mud and grains of sand. This, in deposition, would form a stratum of sandstone, covered with a slight coating of mud or clay; the water which brought these materials retired, and left the stratum

which had thus been formed, dry. This alternate process has gone on many times; how many, cannot be ascertained. Whilst each stratum was dry ground, various animals have come and walked over it in different directions. Upon the water returning and depositing the next superior stratum of sandstone, the sand has filled up the impressions made in the clay, and a cast of the footstep has in consequence been preserved in the sandstone; in many instances, in distinct and high relief. These impressions are the footsteps of one large animal, and a multitude of small animals. The large animal has been called the *Cheirotherium*, from the extreme likeness of its hind footstep to the human hand.

In the same locality have been observed a great number of impressions of the feet of lizards, tortoises, and many other reptiles of analogous character. The vegetable remains in the new red sandstone are apparently of marine origin, and very rare. The impression of a large fucus may be observed on a portion of the sandstone rock on the shore near Woodside. It has been brought into view by the weathering of the rock by the action of the seawater and the elements, being just covered by the sea at spring tides.

Overlying the new red sandstone, and unconformably with it, is an immense accumulation of diluvial clay, of a coarse red appearance, containing an innumerable quantity of boulders of all the older rocks, the largest of them averaging two or three feet in diameter; from which size they may be found down to the smallest pebble. These boulders are all more or less rounded, bearing evident traces of having been long subjected to the action of water, and presenting the appearance of having come from a

great distance. In some places the diluvium is accumulated upwards of thirty feet in thickness, and in others again it forms merely a superficial coating.

The shores of the Mersey and the sea coast, extending for several miles on each side of the river, are remarkable as containing the remains of an ancient forest. Many trunks of trees may be seen occasionally even as far as low water mark, *in situ* in the spot where they were originally growing. These trees are chiefly oaks. They probably have grown at the same time with the peat mosses, which exist so abundantly in this part of the country. On the shore by the Leasowes are the extensive remains of a peat moss with large trunks of trees in the lower parts of it; this is now rapidly wearing away by the action of the tide, which for some years has been gaining upon this part of the coast. It is remarkable that the trees which are embedded deeply in the moss are not at all decayed, and the wood is as sound and perfect as that of recent timber; but it is generally of a dark colour. As an instance of the soundness of this wood, the bolts, handles, and latches of the fishermen's cottages in the neighbourhood of Hoylake are made mostly of oak, which has been procured from the peat moss which occurs upon the sea shore.



DIVISION I.

Vascular,

OR

PHÆNOGAMOUS PLANTS.

RECEIVED

AMOUNT

of the above

CLASS I. EXOGENS; or, DICOTYLEDONS.

SUB-CLASS I. THALAMIFLORÆ.

ORDER I. RANUNCULACEÆ. The Crowfoot Family.

(All the following Genera belong to *Polyandria*—*Polyginia*.)

THALICTRUM, *Linn.* Meadow Rue.

T. MINUS, *Linn.* Lesser Meadow Rue. June, July. 24

Shore N.W. of Parkgate. *J. E. Bowman, MSS. in New Bot. Guide.* Little Hilbre Island.*

T. FLAVUM, *Linn.* Common Meadow Rue. June, July. 24

Späringly in a field by the side of the footpath leading from the Leeds and Liverpool Canal to Waterloo. South shore, beyond the Dingle. Bidston Marsh, near the village, by the ditches.

ANEMONE, *Linn.* Anemone.

✓ A. NEMOROSA, *Linn.* Wood Anemone. April, May. 24 +

Moist woods, and occasionally in fields. Fazakerley, Dingle, &c. Tranmere wood,† Gilbrook, &c.

The flowers vary much in colour, sometimes being of a pure white, and sometimes of a deep purple, with every intermediate shade. *Puccinia anemones*, a minute fungus, occurs on the under surface of the

* Hilbre Island is situated in the mouth of the river Dee, at a short distance from the town of West Kirby, and at the extreme point of the hundred. It was formerly part of this parish, but becoming afterwards a cell to the Abbey of St. Werburgh, in Chester, it was included within the parish of their church of St. Oswald, to which it still continues attached, although it is twenty miles distant from any other portion of the parish. Like the holy islands of Lindisfarn, it was the object of superstitious pilgrimage; and, like those islands, alternately joined to, or separated from the contiguous main land, by the variation of the tide.

† Tranmere wood should be diligently examined in the early spring, as it abounds with most of the favourite spring flowers, so welcome to the botanist, after the long winter. In summer it abounds with *Cari-ces*, *Graminaceæ*, &c. Gilbrook partakes of much the same character, having *Ranunculus auricomus* (Wood Goldilocks), a plant by no means common in the immediate neighbourhood of Liverpool. There

leaves about Woodside. A leaf in this state was mistaken by Dr. Dillenius for a species of Fern, and was figured and described by him, in his edition of Ray's Syn., under the name of *Filix lobata, globulis pulverulentis undique aspersa*.

Mr. H. Shepherd informs me that *A. apennina* has been found near the "Old Hut," between Speak and Hale; but, I should think, under suspicious circumstances.

ADONIS, *Linn.* Pheasant's Eye.

A. AUTUMNALIS, *Linn.* Corn Adonis, or Pheasant's Eye.
September, October. ☉

Occurs in corn fields occasionally, a specimen having been found in a corn field, in the neighbourhood of Crosby, and near Gilbrook.

RANUNCULUS, *Linn.* Crowfoot.

+ R. AQUATILIS, *Linn.* Water Crowfoot. May, June. ♀

Common in ponds and ditches.

In pits, and places where the water is dried up during the summer, this may be found without any of the leaves being divided, as is usually the case in capillary segments.

R. CÆSPITOSUS, *De Cand.* R. aquatilis, Var. γ *Hooker*.

In ditches and still water, in Bidston Marsh; common.

This plant, which at present ranks in our Floras only as a variety of *R. aquatilis*, is entitled, I think, to rank as a distinct species. It grows in perfectly still water, and yet produces none of the floating leaves which characterise the usual state of *R. aquatilis*; neither are the leaves drawn out indefinitely in fine segments, as is the case when growing in rapid streams; but they form an orbicular outline round the stem. It flowers late in the summer, and lasts but a very short time.

R. HEDERACEUS, *Linn.* Ivy-leaved Crowfoot. Summer. ♀

Common in wet places and ditches.

It is often overlooked on account of the smallness of the flowers; the radical leaves likewise greatly resemble those of *R. aquatilis*, that float on the surface, and in watery places may be mistaken for them.

R. LINGUA, *Linn.* Great Spearwort. June, July. ♀

In a ditch (which runs into Rimrose Brook) by the roadside at Litherland. Crosby Marsh. Dr. Bostock, in With. In a marshy spot between Oakfield, North Birkenhead, the residence of Mr. J. R. Pim, and the old Bidston road; also in an adjoining pond, very plentiful.

are some large woods about Eastham, but only having visited them occasionally I never discovered any novelties, except I may mention *Mercurialis perennis*, a plant not common near our shores. Tranmere wood is an excellent field for the Mosses, Lichens, and Fungi, during the winter, but particularly Mosses, as many of the commoner species, which delight in moist, shady situations, are to be found there during the winter season; also a few *Jungermaniæ* occur.

This plant I believe is more common in the north than in the South of England. It is however in most cases a local plant, being tolerably plentiful where it occurs. Mr. Baines observes, that "it is rather shy of flowering in its native habitat, but removed to light rubbishy soil in the garden it flowers abundantly." It flowers plentifully with us, and in the first mentioned locality (which consists of a sort of boggy soil) I have frequently met with specimens having double flowers.

R. FLAMMULA, Linn. Lesser Spearwort. July, August. 2
In ditches, and wet places; very common.

VAR. β. R. REPTANS, Lightfoot Flora Scotica.

In places where water has dried up.

There are Swiss specimens in the Herbarium at the Botanic Gardens of the true *R. reptans*, which would appear to be different from the present plant.

R. FICARIA, Linn. Pilewort Crowfoot. April, May. 2
In meadows, about hedge banks, and in shady places; very common.

Curculio dorsalis may be found on this plant. Charlotte Smith thus introduces it as engaging the attention of her adventurous butterfly :*

"Trusting the first warm day of spring,
When transient sunshine warms the sky,
Light on his yellow spotted wing,
Comes forth the early butterfly.

With wavering flight he settles now
Where *Pilewort* spreads his blossoms fair,
Or on the grass where daisies blow,
Pausing, he rests his pinions there."

I have noticed the leaves of this plant curiously mottled with white spots about Woodside.

R. AURICOMUS, Linn. Wood Crowfoot. April, May. 2
Plentiful in a moist wooded part of Gilbrook, through which is a stream of water.

R. SCELERATUS, Linn. Celery-leaved Crowfoot.
May, June. 2
Sides of ponds, and in ditches, common.

R. ACRIS, Linn. Upright Meadow Crowfoot. June, July. 2
Common in pastures, and by roadsides.

Meloe proscarabæus and *M. violaceus*, frequent; this, as well as other species. On this species as well as *R. Ficaria* may be found the parasitic fungus *Æcidium Ficariæ*.

R. REPENS, Linn. Creeping Crowfoot. June—August. 2
In waste and cultivated ground, and by roadsides; very abundant.

"Well distinguished by its creeping scyons."—Hooker.

* The Brimstone butterfly (*Gonepteryx Rhamni*) one of our earliest visitants in the spring, sometimes appearing in the middle of February.

✶ *R. BULBOSUS*, Linn. Bulbous Crowfoot. May. 24

In pastures, and waste ground; very common.

This is the species usually gathered by children under the name of Butter-cups, though the two former are frequently called by the same name. It covers the grassy spots among the sand-hills at New Brighton, where specimens may be more easily obtained from the light sand, than in meadows where the root is usually entangled with the herbage. I have found, in the above mentioned locality, a variety with double flowers, having the sepals, or calyx-segments partly coloured and partly green, showing the gradual transition from a green calyx, to a coloured corolla. Specimens also occur with a double bulb, the same as figured in the first volume of Loudon's Magazine of Natural History, at page 380. A correspondent under the signature of J. R., in answer to the inquiry respecting the cause of these double bulbs, states it as his opinion that they may prove to be the usual mode of reproduction in this plant, similarly to the bulbs of crocuses. Withering states the bulb to be formed above the bulb of the preceding year, and that when it comes into flower, the old one, in a dry soil, may be found in a state of decay under the new one, and surrounded by the fibres, but without the least appearance of suckers proceeding from either of them.

R. HIRSUTUS, Curt. Pale Hairy Crowfoot. June—Oct. ☉

Crosby. *J. S. in Herb. of the Bot. Gard.* Garston, and near Parkfield, the residence of Mr. Charles Tayleure. *H. Shepherd.* In fields by the side of the New Bidston Road, opposite the Patent Slip, also opposite Laird's Boiler Yard. Sparingly, in one locality on Bidston Heath.

The Cheshire specimens of this plant are very small, from four to five inches only in height; in this state it is the *R. parvulus*, Linn. *Mant.* and *Sm. Fl. Brit.* The Crosby specimens in the Herbarium at the Botanic Gardens are from ten to eleven inches, and appear to be the true *R. hirsutus*.

R. ARVENSIS, Linn. Corn Crowfoot. June. ☉

Rabbit Warren, Crosby. *Dr. Dickinson.* Plentiful in corn fields, near Gilbrook. In a cornfield near the windmill, Upper Tranmere. *H. C. Watson.*

Specimens of this plant should be obtained in fruit, on account of the highly interesting and curious "muricated pericarps."

There are specimens of *R. parviflorus* in the Herbarium at the Botanic Gardens, marked "sandy corn fields, Crosby, 1801," but I think it doubtful if the plant could now be found there. The seed has most likely been sown with the corn, as it is stated in the British Flora to be "common in the S. and S. W. of England," and being moreover an annual plant, it is likely to disappear as the crops of the fields become changed. In Withering the localities are inserted thus, "Bootle, Dr. Bostock. Crosby, Mr. Shepherd."

CALTHA. Linn. Marsh-marigold.

C. PALUSTRIS, *Linn.* Common Marsh-marigold.

March—June. 24

Very common in wet marshy places, and by the side of ponds.

This plant varies much, according to the degree of moisture where it grows. The variety β of Hook. (*C. radicans*, *Sm.*) although not observed by me, no doubt occurs in situations congenial to its creeping habit.

TROLLIUS, *Linn.* Globe-flower.

T. EUROPEUS, *Linn.* Globe-flower. June, July. 24

Earl of Sefton's Park. *Dr. Dickinson.*

This plant is a very interesting addition to our Flora, and I hope that it may be discovered in additional localities. It is stated in Baxter's Flowering Plants to occur in Cheshire, in a wood betwixt Stayley Hall and Scout Mill, at a place called Wems, in great plenty.

There is a specimen of *Clematis vitalba*, in the Herbarium at the Botanic Gardens, stated to have been found in Cheshire by J. Clough, in 1801, but there must be some mistake, as it is not a plant likely to be found in this neighbourhood. It has been most probably a stray specimen from a garden.

Mr. Tudor has found a few specimens of *Aquilegia vulgaris* near the footpath leading from Walton to Fazakarley, but I do not consider that the single occurrence of a plant, so commonly cultivated in gardens, will warrant me in including it among the plants indigenous to the neighbourhood.

ORDER III. NYMPHÆACEÆ. The Water-Lily Family.

NYMPHÆA. *Linn.* White Water-Lily.

(The following Genera belong to *Polyandria*—*Monogynia*.)

N. ALBA, *Linn.* Great White Water-Lily. July. 24

Very common in ponds, and in clay pits.

“The water-lily to the light
Her chalice rears of silver bright.”

This is perhaps the most magnificent of our native flowers.

NUPHAR, *Sm.* Yellow Water-Lily.

N. LUTEA, *Sm.* Common Yellow Water-Lily. July. 24

In the river Alt,* by Formby. *Mr. Shepherd, in With.*

* It will not be out of place to remark on the total absence of rivers in the geographical features of the neighbourhood of Liverpool, and con-

Near New Ferry. *H. C. Watson.* Pits near Hoylake. *Miss E. Potts.*

The Yellow Water-Lily, in the neighbourhood of Liverpool is, comparatively speaking, a very rare plant. I have never met with it myself, but the white one is exceedingly abundant. In other parts of England that I have visited, the reverse has been the case, for I formerly considered *N. alba* as rather a suspicious plant, being so often cultivated in ponds in pleasure grounds for the sake of its highly ornamented flowers, which may vie with many exotic productions.

ORDER IV. PAPAVERACEÆ. The Poppy Family.

(The following Genera belong to *Polyandria*—*Monogynia*.)

PAPAVER. *Linn.* Poppy.

P. ARGEMONE, *Linn.* Long-prickly-headed Poppy.

June. ☉

In sandy places, and borders of fields. Common in the neighbourhood of New Brighton.

P. DUBIUM, *Linn.* Long-smooth-headed Poppy. July. ☉

In similar situations, along with the preceding.

P. RHÆAS, *Linn.* Common Red Poppy. June, July. ☉

In similar situations, along with the preceding species.

I consider that these three species occur in nearly equal proportions, *P. Argemone* being perhaps the most common. *P. Rhæas*, in fact, is not the most common species in all localities, though it is, I believe, generally considered so. The following characters will serve to distinguish these three nearly allied species.

P. Argemone differs from *P. Rhæas* and *dubium* by its smooth capsule. The other two species may be distinguished as follows. *P. Rhæas* has a ten-rayed stigma on a globose capsule, whilst *P. dubium* has only a six—seven-rayed stigma on an oblong capsule.

GLAUCIUM. *Tourn.* Horned Poppy.

sequently on the absence of all fluviatile plants. The present stream has no claim to be called a river, being merely a small brook. It rises in Knowsley Park, the seat of the Earl of Derby, and is interesting on account of producing the Graining, a rare British fish, hitherto having only been found in a few localities in Lancashire. See Yarrell's British Fishes, vol. ii. p. 355. From the confined nature of the Hundred of Wirral there is only one stream of any importance, and that is very small; it has however obtained the name of the Birkin; it rises at Newton Carr, and runs along Bidston Marsh, to which it forms a drain falling into Wallasey Pool.

G. LUTEUM,* Linn. Yellow Horned Poppy. July,
August. 24

Bootle Sands. *R. Tudor*, and *H. W.* in *New Bot. Guide*.
North Shore, near the mouth of the river Alt. *Mr. Shepherd*,
in *With*. Along the Parkgate Shore. *Miss E. Potts*.

CHELIDONIUM, Linn. Celandine.

C. MAJUS, Linn. Common Celandine. May, June. 24

Near villages inland, but not near the sea-coast. *Walton*.
R. Tudor. Near Aigburth and Garston, and at West Derby.
Dr. Dickinson. In a lane near Allerton. *J. S.* 1801, in *Herb*.
In lanes about Eastham.

ORDER V. FUMARIACEÆ. The Fumitory Family.

CORYDALIS. De Cand. Corydalis.

(The following Genera belong to *Diadelphia—Hexandria*).

C. CLAVICULATA, De Cand. White Climbing Corydalis.
June, July. 24

Knot's Hole. *Dr. Bostock*, in *With*. *Crosby*. *R. Tudor*.
Seaforth. *Dr. Dickinson*. Plentifully in a hedge on the left
hand to the side of the footpath leading from North Birken-
head to Bidston Lighthouse, very near the Lighthouse. Occa-
sionally on walls about Bidston.

FUMARIA, Linn. Fumitory.

F. CAPREOLATA, Linn. Ramping Fumitory. May—
August. 24

Very abundant in the hedges round Liverpool, (see *Sir J. E.*
Smith's Eng. Flora.) Brick Lane, Everton. *Dr. Dickinson*.
In a lane leading to Haswell. *Miss E. Potts*. Birkenhead
Abbey Walls (?) *A. Stewart*.

F. OFFICINALIS, Linn. Common Fumitory. Summer. ☉

Very common in hedges, cultivated ground, and waste places.

ORDER VI. CRUCIFERACEÆ. The Cruciferous Family.

(The following Genera belong to the Class *Tetradynamia*.)

SUB-ORDER. PLEURORHIZEÆ.

* This plant, *Mr. Tudor* observed, was much injured by the severe
winter of 1837-8, very few of the plants appearing above ground in the
spring of 1838, but towards the autumn he noticed a few to re-appear.

NASTURTIIUM, *Br.* Cress. *Siliquosa.*

N. OFFICINALE, *Br.* Water-cress. July. 2

Common in watery places.

N. TERRESTRE, *Br.* Marsh Nasturtium. June—Sept. 2

In watery places, not frequent. Bootle. *R. Tudor.* Abundant in some fields in Toxteth Park. *Dr. Dickinson.* Near Ince Blundell. *J. S. in Herb.* Woodside, near Gilbrook.

I think the seed vessels and blossoms are best represented in *Fl. Dan.* and the leaves in *Mr. Curtis's* figure in *Fl. Lond.*—*Col. Velley's MS. notes.*

N. AMPHIBIUM, *Br.* Amphibious Nasturtium. June—August. 2

Crosby Marsh. *H. Shepherd.*

BARBAREA. *Br.* Winter-cress. *Siliquosa.*

B. VULGARIS, *Br.* Bitter Winter-cress. May—August. 2

On hedge banks, and in waste places, frequent.

I have met with starved specimens of this plant growing in dry places, which answer to the description of *B. præcox.*

ARABIS. *Linn.* Rock-cress. *Siliquosa.*

A. HIRSUTA, *Br.* Hairy Rock-cress. June. ♂ *Q. many*

Sand hills, New Brighton. Bootle?

CARDAMINE, *Linn.* Bitter-cress. *Siliquosa.*

C. AMARA, *Linn.* Bitter Lady's Smock. April—June. 2

Meadows near West Derby and about Woodside. *Dr. Dickinson.*

C. PRATENSIS, *Linn.* Common Bitter-cress. May. 2

Very common by the sides of ponds and ditches, and in wet meadows.

"The flowers appear about the same time with the Cuckoo, whence it is called the Cuckoo Flower; and their covering the meadows as with linen spread out to bleach, is supposed to be the origin of the other English name, now extended to the whole genus. They are associated with pleasant ideas of Spring, and join with the White Saxifrage, the Cowslip, Primrose, and Hare-bell, to compose many a rustic nosegay."—*Sm.*

✓ C. HIRSUTA, *Linn.* Hairy Bitter-cress. March—June. 2

On dry banks, and in wet places, ditches, &c.; abundant.

This plant varies much in size and luxuriance, according to soil and situation. I have specimens from dry banks scarcely two inches high; and in moist situations it reaches a foot or more.

C. impatiens is inserted in the New Bot. Guide copied from Turner and Dillwyn, who state it to be a common weed in the county (Cheshire), but Mr. Watson has a remark, very justly doubting its occurrence. It is also stated by Turner and Dillwyn as not uncommon in Lancashire. Mr. Watson remarks again, very justly, that perhaps there is some error as to the species; *C. amara* being often mistaken for it; and Mr. Robert Leyland observes, in the supplement to the New Botanist's Guide, that it is certainly not common, if found at all in the county. Mr. H. Shepherd of the Botanic Gardens has visited many parts of the latter county and has never observed it, nor does he indeed consider it at all a likely plant to occur in either Lancashire or Cheshire, as it usually affects more mountainous districts. He has found it at Ingleborough in Yorkshire at a considerable elevation.

DRABA. *Linn.* Whitlow-Grass. *Siliculosa.*

D. VERNA, *Linn.* Common Whitlow-Grass. March—
Erophila Vulgaris May. 24

On walls, banks, and roofs, very abundant.

"This is one of our earliest flowering plants, enlivening the tops of walls, rocks, and barren uncultivated places, with its little white blossoms, at a time when there are very few other flowers to attract our attention; and though it is insignificant in itself, yet it excites in us the pleasing reflection, that the season is approaching, when

"All that is sweet to smell, all that can charm
Or eye, or ear, bursts forth on every side,
And crowds upon the senses."

COCHLEARIA. *Linn.* Scurvy-Grass. *Siliculosa.*

C. OFFICINALIS, *Linn.* Common Scurvy-grass. May,
June. ☉

Bootle. R. Tudor. Shore of the Mersey. H. W. in *New Bot. Guide.* Wallasey* and Bromborough Pool.

* The parish of Wallasey is separated from the rest of the Hundred by a small brook, the Birkin, which renders communication with the other part of Cheshire difficult and circuitous. The district is now bare of timber, but there is a tradition that the place was formerly so well planted, "that a man might have gone from tree-top to tree-top, from the Meole stocks to Birkenhead." The Meole stocks were trunks of trees in the sea shore above New Hall.

Some of our best botanists consider that *C. Anglica* is not to be distinguished as a species from *C. officinalis*; the only distinguishing mark I believe is in the form of the capsule, which in *C. Anglica* is elliptical, and in *C. officinalis* it is globose. Mr. Watson informed me that among some specimens of *C. officinalis* which I sent to him from Wallasey Pool, there were also specimens of *C. Anglica*. I think that they must have been procured from Hilbre Island, as I was there in the spring of 1837, and gathered some specimens which I took to be *C. officinalis*, and mixed them with my Wallasey Pool specimens.

C. DANICA, Linn. Danish Scurvy-Grass. May. ☉

Parkgate. Miss. E. Potts.

C. Armoracia is sometimes found in the neighbourhood of Liverpool, but generally as an outcast of gardens.

THLASPI. Linn. Penny-cress. *Siliculosa.*

T. ARVENSE, Linn. Mithridate Mustard, or Penny-cress.

June, July. ☉

Kirkby, near the New Inn. R. Tudor.

TEESDALIA. Br. Teesdalia.

S. NUDICAULIS, Br. Naked-stalked Teesdalia. May, June. ☉

On dry banks near Bootle. Dry banks near Tranmere, Bidston, &c. *H. W. sp. in New Bot. Guide.* On a bank by the road side between the Mount and the village of Frenton.

CAKILE. Gært. Sea Rocket. *Siliculosa.*

C. MARITIMA, Willd. Purple Sea Rocket. June, July. ☉

Abundant on the sandy sea shore at Bootle, New Brighton, &c.

SUB-ORDER. NOTORHIZEÆ.

SISYMBRIUM. Linn. Hedge-Mustard. *Siliquosa.*

S. OFFICINALE, Linn. Common Hedge-Mustard.

June, July. ☉

Waste places, and by way sides, very abundant.

S. SOPHIA, Linn. Fine-leaved Hedge-Mustard. Aug. ☉

Bootle. R. Tudor. Crosby sandbanks. *J. S. in Herb.*

Abundant in various situations in Wirral, but generally near the sea. Bidston village, near the Church. Near Leasowe Castle, New Brighton, &c.

Withering remarks that the pods retain the seeds through the winter, affording support to small birds who feed upon them.

S. THALIANUM, Hook. Common Thale-cress. April, May. ☉

Walls, drybanks, &c., very common.

ERYSIMUM. Linn. Treacle-mustard. *Siliquosa.*

E. ALLIARA, Linn. Garlic Treacle-Mustard. May, June. ♂

Hedge banks and waste places, common.

This plant is very ornamental in our hedges, flowering in the spring or early in summer. *Curculio Alliaria* feeds upon it. *Linn.* Country people are said to eat it as a salad, with bread and butter. It is sometimes called Jack-by-the-Hedge or Sauce-alone. *✓ Jack in the Hedge*

There is a specimen of *Hesperis inodora* in the Herbarium, marked as found in Cheshire by J. Clough in 1801, and I have had a specimen given to me by Mr. T. G. Rylands, of Warrington, gathered somewhere near Bootle, but in all cases I am sure they will prove to be outcasts of gardens.

CORONOPUS. Gært. Wart-cress. *Siliculosa.*

C. RUELLII, Sm. Common Wart-cress or Swine's-cress. June—September. ☉

Waste grounds, and by road sides, very abundant.

This plant seems to prefer localities where there is a constant traffic, growing in situations where no other plant would thrive, except, perhaps, *Poa annua*.

C. Didyma grows abundantly in the neighbourhood of Crown Street, having become naturalized there along with other plants, by the removal of the Botanic Gardens to their present situation.

CAPSELLA, De Cand. Shepherd's Purse. *Siliculosa.*

C. BURSA—PASTORIS, De Cand. Common Shepherd's Purse. Summer. ☉

Waste places, &c. very abundant.

This plant is sometimes infested with oval white blotches of the small parasite fungus, *Uredo Thlaspi*. Small birds feed on the seeds.—*With.*

It is very variable in height, and also in the shape of the leaves, according to the influence of soil and situation. It has a very extensive geographical range, occurring in almost every part of the world. March and April are the months in which it is most generally found in flower; yet like the groundsel (*Senecio vulgaris*) and *Poa annua*, it may be found in this state at almost any time of the year. The radical leaves, as Mr. Curtis observes, differ so exceedingly in their appearance, that the most expert botanist is often obliged to have recourse to its most striking character, the shape of its seed-vessels, before he can with certainty distinguish it. When it grows on walls, and in dry situations, the root-leaves are more deeply divided, and the segments become much narrower: in cultivated ground they are broader, and less jagged; and in a dry barren chalk the leaves are all entire. It is a strong instance of the influence of soil and situation; sometimes not being more than two or three inches when it flowers and perfects its seeds, whilst in other situations it attains the height of as many feet.—*Baxter's Flowering Plants*.

LEPIDIUM, Linn. Pepperwort. *Siliculosa*.

L. LATIFOLIUM, Linn. Broad-leaved Pepperwort. July. ♀
Hollylake. *R. Tudor*.

L. CAMPESTRE, Br. Common Mithridate Pepperwort.
July. ☉

Very abundant in waste places, and by way-sides.

SUB-ORDER ORTHOPLOCEÆ.

BRASSICA, Linn. Cabbage Turnip. *Siliquosa*.

B. NAPUS, Linn. Rape, or Cole-seed. May, June. ♂
Borders of fields and waste places. *Dr. Dickinson*.

B. RAPA, Linn. Common Turnip. April, May. ♂
Waste ground. *Dr. Dickinson*. In fields in Wirral, occasionally. *H. C. Watson*.

B. CAMPESTRIS, Linn. Field Cabbage. June, July. ☉
In similar situations with the preceding. *Dr. Dickinson*.

B. MONENSIS, Br. Isle-of-Man Cabbage. June, July. ♀
Sand-hills on the shores of the Mersey, at Bootle, and New Brighton.

In places where cattle graze the plant is always eaten down to the root; and probably in poor sandy soil, especially near the sea, it might be cultivated to advantage. The different species of *Brassica* afford nourishment to *Papilio Brassica*, *Rapa*, and *Napi*; *Phalæna fuliginosa*, *Aphis Brassica*, and *Chrysomela Hyoscyami*.---*With*.

SINAPIS, *Linn.* Mustard. *Siliquosa*.

S. ARVENSIS, *Linn.* Wild Mustard, or Charlock. May, June. ☉

In corn-fields very abundant.

S. ALBA, *Linn.* White Mustard. July. ☉

Waste places and borders of fields.

S. NIGRA, *Linn.* Common Mustard. June. ☉

Waste places, and borders of fields, along with the preceding.

RAPHANUS, *Linn.* Radish. *Siliquosa*.

R. RAPHANISTRUM, *Linn.* Wild Radish. June, July. ☉

Common about Liverpool. *Dr. Dickinson.* Fields in Wirral.
H. C. Watson.

Col. Velley remarks, that this finely-blossomed plant is very common in Essex, where it produces a clearer flower, and whiter, than is represented in the Flora Londinensis.

ORDER VII. RESEDAECÆ. The Mignonette Family.

(The following genus belongs to *Dodecandria*—*Trigynia*.)

RESEDA, *Linn.* Rocket.

R. LUTEOLA, *Linn.* Dyer's Rocket. July. ☉

In waste places, and by roadsides occasionally. Between Crosby and the sea. *Dr. Bostock, in With.*

R. FRUTICULOSA, *Linn.* Shrubby Base Rocket. June.
♂ or ♀.

Sand-hills, near Bootle Land-mark.

The above locality is inserted by Mr. Watson in his New Botanist's Guide; but he states, that the ground has since been built upon, and that he sought the plant unsuccessfully in 1832. Mr. Watson, however, has seen the plant again (in 1837) among the sand-hills. The locality I consider a very suspicious one, as it appears near some heaps of garden rubbish, and the plant has most likely originally been an outcast from some garden in the neighbourhood.

ORDER IX. VIOLACEÆ. The Violet Family.

VIOLA, *Linn.* Violet. *Pentandria*—*Monogynia*.

V. ODORATA, *Linn.* Sweet Violet. March, April. ♀

Speke. *A. Stewart.* Birkenhead Church-yard (introduced by a lady). *H. C. Watson.*

" Just to say the spring has come,
Peeps sweetly from her woodland home,
And, hermit-like, from storms and wind,
Seeks the best shelter she can find,
'Neath long grass banks."—CLARE.

V. HIRTA, Linn. Hairy Violet. April, May. ♀

Near Eastham, on the road to Chester. H. Shepherd.

Distinguished from *V. odorata* by its short, *not creeping* scions, by the greater hairiness of the plant, and by the little bractæas of the scape being *below*, instead of *above* the middle.

V. CANINA, Linn. Dog's Violet. April—August. ♀

In woods and on banks, common.

VAR. β. V. FLAVICORNIS, Sm. Dwarf Yellow-spurred.

On a bank near Crosby Rabbit warren, 1821. J. S. in *Herb.*

There are specimens in the Herbarium, gathered on the sand hills near Bootle Land-mark, marked variety 2 of With, which variety is identical with the above variety β of Hook., which was made into a separate species by Sir J. E. Smith. Dr. Dickinson and myself cannot, however, see any thing different in the specimens, from the usual state of *V. canina*, except their somewhat smaller size. There are specimens of a white variety from the sand-hills in the Herbarium, gathered by the late Mr. J. Shepherd.

V. TRICOLOR, Linn. Pansy Violet or Heart's-ease. Summer. ♂ ☉ or ♀

Common on the sand-hills at New Brighton, Bootle, &c.

VAR. β. V. ARVENSIS. E. B. Supplt. Corn Pansy.

Abundant in corn fields, waste places, and by road sides.

The specimens of *V. tricolor* which grow on the sand-hills are very puzzling to young botanists, as they produce such an endless variety in the colours of their corolla. Mr. Henry Shepherd states it to have a perennial, stoloniferous root, approaching very nearly to *V. rupi*, of the continent. The variety β may always be known by its much paler flowers. Mr. W. Wilson thinks it not unlikely that some states of this plant may approach *V. Curtisii*, Forst. in *E. B. Suppl.* t. 2693, which idea I previously entertained. Mr. Leighton of Shrewsbury, not content with the splitting of species effected by Mr. Forster, is about to try his hand at increasing the confusion which exists in this genus.

Viola palustris was brought to Dr. Dickinson, said to be gathered on Crosby Marsh, but as specimens of this plant are not preserved, and the locality moreover requires confirmation, I leave it for future investigation.

ORDER X. DROSERACEÆ. The Sun-dew Family.

DROSERÆ. *Linn.* Sun-dew.D. ROTUNDIFOLIA, *Linn.* Round-leaved Sun-dew. 2Orrell. *R. Tudor.* About Allerton Hall. *Mr. Shepherd,* in *With.* Bidston Heath.D. LONGIFOLIA, *Linn.* Long-leaved Sun-dew. July. 2About Allerton Hall. *Mr. Shepherd,* in *With.* Mosses, Lancashire, as Gill Moss, &c. *H. Shepherd.* Bidston Heath. Heswall Hills. *Miss E. Potts.*

Mr. W. Wilson observes that specimens gathered in Cheshire abound in colouring matter, and stained the paper in which they were placed, after having been dried, of a deep, rusty red colour, which also penetrated several contiguous sheets; and that *D. rotundifolia*, on the same sheet, was found to possess a similar property, but in a much slighter degree.—*Hook.*

D. ANGLICA, *Huds.* Great Sun-dew, July, August. 2Mosses, Lancashire, as Gill Moss (near Knowsley), &c. along with the preceding. *H. Shepherd.*

This is by far the most rare of the three species; whether it occurs in Wirral I cannot state. They were all three considered, I believe, varieties, till Mr. W. Wilson discovered correct discriminating characters in the seeds. (see Hooker.) They have the power of entrapping insects, nearly approaching to that of the *Dionæa muscipula*, or Venus' Fly-trap, and it is a most interesting inquiry, whether this destruction of insects is or is not necessary to the welfare of the plant.

PARNASSIA. *Linn.* Grass of Parnassus. *Pentandria—Tetragynia.*P. PALUSTRIS, *Linn.* Common Grass of Parnassus. August—October. 2

In damp grassy spots among the sandhills, on the shores of the Mersey.

I have specimens from Hoylake which are scarcely an inch high, the flower just appearing above the leaves, which are all radical, and specimens are rarely met with more than six inches high. It is most inappropriately termed a grass, but I should be sorry to see its English name changed for one less classical, as it is one of our most elegant native plants. Its large and beautiful nectaries, tipped with from ten to fifteen yellow pellucid globules, form an excellent object for the microscope and may be mounted in Canada balsam.

ORDER XI. POLYGALACEÆ. The Milkwort Family.

POLYGALA. *Linn.* Milkwort. *Diadelphia—Octandria.*

P. VULGARIS, Linn. Common Milkwort. June, July. 2

Very common in dry barren places inland, as well as on the sandhills on the coast.

The corolla is beautifully crested, very variable in colour. On the sandhills it is usually pale blue or white. Inland it is found of a deep blue, and of a delicate pink.

ORDER XIII. CARYOPHYLLÆCEÆ. The Chickweed Family.

TRIBE SILENÆÆ.

(The following Genera belong to *Decandria*.)

DIANTHUS, Linn. Pink. *Digynia*.

D. ARMERIA, Linn. Deptford Pink. July, August. ☉

Abundant in a corn field at Little Sutton.

Through the kindness of Mr. R. Slack I was favoured with a sight of this interesting plant, which was flowering in great abundance in September after the corn had been cut.

D. DELTORDES, Linn. Maiden Pink. July, August. 2

Near Wallasey Church. *J. S. in Herb.*

Mr. H. Shepherd informs me that he has seen this plant recently, and describes it as occurring by the side of Wallasey Pool among the gorze bushes, probably a little beyond Gilbrook.

SAPONARIA, Linn. Soapwort. *Digynia*.

S. OFFICINALIS, Linn. Common Soapwort. July, Aug. 2

With double flowers, on a grassy bank near Rimrose Hotel. Wirral. *H. C. Watson*. Bidston Church Yard, very sparingly. Bidston Village. *H. Shepherd*.

A curious variety of this plant, with combined sheathing upper leaves, and a monopetalous corolla, is mentioned in Baxter's Flowering Plants as having been found near Liverpool by Dr. Bostock.

SILENE, Linn. Catchfly. *Trigynia*.

S. INFLATA, Sm. Bladder Campion. June—August. 2

Crosby Rabbit Warren. *J. S. in Herb.* Near Otterspool. *H. Shepherd*. In a field opposite the Albion Hotel, Woodside. Eastham, in fields by the river, on the New Ferry side. *H. C. Watson*.

VAR. γ. S. MARITIMA, With. June—August. 2

Sparingly in a sandy spot on the shore between Tranmere and Rock Ferry. Very abundant on the rocks at Hilbre Island.

S. ANGLICA, Linn. English Catchfly. June, July. ☉

Lancashire. *W. Wilson*, in *Br. Fl.* In a narrow lane, leading from Bidston Church towards the shore, and occasionally among the sandhills. *H.C. Watson*. Heswall Hills. *Miss E. Potts*.

S. QUINQUEVULNERA, Linn. Variegated Catchfly. June, July. ☉

Cornfields about Crosby, 1801. *J. S. in Herb.* Hoylake, in 1129. *J. S. in Herb.*

There are specimens of *S. nutans* in the Herbarium at the Botanic Gardens, gathered by the late Mr. J. Shepherd in 1792. "On dry banks, north shore between the Mill House and the Dog Kennels." These latter are now destroyed.

L. FLOS—CUCULI, Linn. Meadow Lychnis. June. 24

Common in wet meadows and pastures, and by the side of ponds.

Mr. H. Shepherd says that he has observed, for a number of years, a very handsome white variety abundant on Crosby Marsh.

L. DIOICA, Linn. Red or White Campion. 24

VAR. α. L. DIURNA, Sibth. (Flowers red.) May, June.

Very abundant by way-sides, and in shady hedge banks.

The leaves are more ovate and softer; and the stem is not so persistent as in the white variety. The form of the fruit, Dr. Smith observes, affords no distinction. *Col. Velley's MS. notes.*

VAR. β. L. VESPERTINA, Sibth. (Flowers white.) June—September.

In similar situations to the preceding. Equally common as the other, in the neighbourhood of Liverpool. *Dr. Dickinson.*

The stem in this variety is more firm, and the leaves are narrower than in the red one, flowers generally diœcious. The petals in the female plant are not divided down to the claws as in the male, according to Dr. Withering. In the evening Dr. Sibthorpe observes that the flowers are sweet scented.—*Col. Velley's MS. notes.*

AGROSTEMMA, Linn. Cockle. *Pentagynia.*

A. GITHAGO, *Linn.* Corn Cockle. June, July. 24

In corn fields, common.

TRIBE ALSINEÆ.

SAGINA. *Linn.* Pearl-wort. *Tetrandria—Tetragynia.*

S. PROCUMBENS, *Linn.* Procumbent Pearl-wort. May—August. 24

On walls, roofs, and banks, very abundant.

S. MARITIMA, *Don.* Sea Pearl-wort. May—Aug. ☉

Bootle, very abundant in damp spots. In damp sandy spots near New Brighton.

It is not unlikely that *S. apetala* might be found with the preceding species on our sandy sea shores.

MÆNCHIA. *Ehrh.* Mœnchia. *Tetrandria—Tetragynia.*

M. ERECTA, *Sm.* Upright Mœnchia. May. ☉

Banks of the Tide mill dam, (now destroyed.) *J. S. in Herb.*
In many places between New Ferry, the Rock, and Leasowes.
Several places round Bidston. *H. C. Watson.*

I have never found this plant, but Mr. Watson states that it may be found in several localities, particularly on the land side of the tract of sand hills between the Rock (Lighthouse) and Leasowes, particularly opposite Bidston, about one quarter or one half a mile distant.

SPERGULA. *Linn.* Spurrey. *Decandria—Pentagynia.*

S. ARVENSIS, *Linn.* Corn Spurrey. June—August. ☉

By the borders of fields, roadsides, and waste places, very abundant.

VAR. β . S. PENTANDRA, *Eng. Bot.* Smooth-seeded Corn Spurrey.

Sandy ground about Liverpool. *J. S. in Herb.*

This variety was at first supposed by Sir J. E. Smith to be a distinct species. "There is not however the smallest difference in the size or structure of any part of the plant, except the seeds, in which indeed the difference is remarkable. But intermediate appearances may be traced between the round rough angular seeds of the common Spurrey, and the smooth, lenticular, bordered one of this variety." The late Mr. J. Shepherd was the first botanist who noticed it in this country and considered it to be distinct from the other.

S. NODOSA, *Linn.* Knotted Spurrey. July, August. 24

Bootle, Seaforth Common, &c. New Brighton, &c. in damp sandy spots. Bidston Marsh.

The flowers are large, of a brilliant white, and, when fully expanded, the whole plant has a very interesting appearance.

STELLARIA. *Linn.* Stitchwort. *Decandria—Trigynia.*

S. MEDIA, *With.* Common Chickweed. All the year round. ☉

In waste and cultivated ground, and by roadsides, very common.

Plant very variable in size, the extremes are well represented in English Botany. The alternate lines of hairs between each pair of leaves, well distinguishes it in all its states. Small birds are very fond of the seeds.

S. HOLOSTEA, *Linn.* Greater Stitchwort. May. ♀

Woods and hedges, frequent.

The ripe capsules if pressed burst with a loud noise, hence by country people called crackers. The flowers are exceedingly ornamental to our hedge banks in spring, and usually compose part of a rustic nosegay. *Dermestes flavescens* feeds on both petals and stamens.

S. ULIGINOSA, *Murr.* Bog Stitchwort. June. ☉

In ditches and boggy meadows, frequent.

There are specimens of this plant from Mosslake fields, in the Herbarium at the Botanic Gardens, marked *S. glauca*; but *S. glauca* is a much rarer plant, and not, that I am aware, found in this neighbourhood.

S. GRAMINEA, *Linn.* Lesser Stitchwort. May. ♀

In wet shady places, and by the side of ponds, common.

ARENARIA. *Linn.* Sandwort. *Decandria—Trigynia.*

A. PEPLOIDES, *Linn.* Sea-side Sandwort. July. ♀

Sandy sea-shore of the Mersey, common.

A. TRINERVIS, *Linn.* Three-nerved Sandwort. May. ☉

In woods and shady places, frequent.

This plant has very much the habit of *Stellaria media*, and may, at first sight, be easily mistaken for it.

A. SERPYLLIFOLIA, *Linn.* Thyme-Leaved Sandwort. June. ☉

Sand hills on the coast, frequent; and in dry barren situations inland.

A. RUBRA, *Linn.* Purple Sandwort. June. ☉

In similar situations to the preceding.

A. MARINA, *Æd.* Sea-side Spurrey Sandwort. June,
July. ☉

Muddy inlets of the Mersey, as Wallasey, and Bromborough Pool, &c., common.

Scarcely to be distinguished from the former, except by its much more succulent leaves, (tipped with a point,) consequent on its situation.

CERASTIUM. *Linn.* Mouse-ear Chickweed. *Decandria—
Pentagynia.*

C. VULGATUM, *Linn.* Broad-leaved Mouse-ear Chickweed.
April—June. ☉

In meadows, and by road sides, frequent. Sometimes on walls and roofs.

The light green hue, yellowish in decay, its more upright mode of growth, and broad ovate leaves, with smaller flowers, well distinguish this from the following. The hairs on the calyx and on the upper part of the stem end in oval or globular glands, containing a viscid liquor, which gives a clamminess to the touch. *With.*

C. VISCOSUM, *Linn.* Narrow-leaved Mouse-ear Chick-
weed. The whole summer. 2

In similar situations along with the preceding, but more common.

C. SEMIDECANDRUM, *Linn.* Little Mouse-ear Chickweed.
March, April. ☉

Frequent on the sand-hills on the coast.

C. TETRANDEM, *Curt.* Four-cleft Mouse-ear Chickweed.
May—June. ☉

Sand-hills on the coast. Sandy and pebbly shore on the Seacombe side of Wallasey Pool; also about Woodside and Tranmere, by the roadside, and on banks, &c. *H. C. Watson.*

Four and five-cleft specimens of a *Cerastium* occur very plentifully on the sand-hills at Bootle, New Brighton, &c. flowering very early in the spring, which I consider are referable to the above species, though I can discover no distinguishing character between them, and their habit appears nearly similar. The remarks on these two species in the British Flora are most admirable.

ORDER XIV. MALVACEÆ. The Mallow Family.

(The following Genus belongs to *Monadelphia—Polyandria.*)

MALVA. *Linn.* Mallow.M. SYLVESTRIS, *Linn.* Common Mallow. June—Aug. 24

Waste places and way-sides, common.

This species has been particularly recommended as a substitute for hemp. *Apion malvæ* may be found on this plant. It also affords nutriment and shelter to *Apion oxurum*, and *A. æneum*, *Haltica rufipes*, and *Noctua clavaria*.—*With.*

M. ROTUNDIFOLIA, *Linn.* Dwarf Mallow. June—Sept. 24

In similar situations to the preceding, but not so common.

M. MOSCHATA, *Linn.* Musk Mallow. July, Aug. 24

In a pasture field opposite the Albion Hotel, Woodside, in 1836. Abundant in a pasture field at Little Sutton. With white flowers, in the neighbourhood of Woodside, but most probably an outcast from a garden.

The fibres of the *Mallows* are particularly beautiful; in some of the species they are finer than camel's hair, and are easily procured by maceration. The farina is a pretty microscopic object, appearing toothed like the wheel of a watch. In the Language of Flowers the mallow is used as symbolical of a sweet and mild disposition. *Barter.*

ORDER XVI. HYPERICACEÆ. The Tutsan Family¹.HYPERICUM, *Linn.* St. John's-wort. *Polyadelphia*—*Polyandria*H. ANDROSÆMUM, *Linn.* Tutsan or Park-leaves. July. 24

Toxteth Park. *Dr. Bostock, in With.* On the left hand side of the old Bidston road, about two miles from Woodside. In a lane leading from thence to Claughton Hall. Sparingly between Seacombe and Bidston. *H. W. in New Bot. Guide.* Between Sir Thomas Stanley's and Eastham, a little above the river. *H. Shepherd.*

H. QUADRANGALUM, *Linn.* Square-stalked St. John's-wort. July. 24

In moist hedges and shady places, frequent. *Dickenson's Dingle.* Dr. Bostock, in With.*

* The Dingle is worthy of being visited by the botanist, though perhaps it is not so good a locality for phænogamous plants as it formerly was, when altogether open to the public. There are a great many plants from there in the Herbarium at the Botanic Gardens, collected by the late Mr. Shepherd and by Dr. Bostock. It formerly went under the names of Knot's-hole and Dickenson's Dingle. It is now open to the public on Wednesdays and Thursdays, and permission to visit it may at all times be obtained from the proprietor, J. B. Yates, Esq.

H. PERFORATUM, Linn. Common Perforated St. John's-wort. July. 2

In similar situations, more common.

As this plant was found to bleed at the slightest touch, it was supposed to have a vulnerary quality, and became the 'Balm of the Warrior's wound,' giving a blood-red colour to every composition, whether of a spirituous or oily nature, in which it entered. The essential oil, the seat of this colour, is aromatic, and possibly tonic or stimulating, without much acrimony. *Sm.*

H. HUMIFUSUM, Linn. Trailing St. John's-wort. July. 2

Bootle. *R. Tudor.* In grassy spots at New Brighton. Sea-combe. *H. C. Watson.* Bidston. *Dr. Dickinson.*

H. PULCHRUM, Linn. Small Upright St. John's-wort. July. 2

Fazakarley. *R. Tudor.* Knot's Hole. *Dr. Bostock,* in *With.* Very abundant in shady situations, about Woodside, Sea-combe, &c.

This is a truly elegant plant, well meriting the trivial name bestowed on it by *Tragus.* *With.*

H. ELODES, Linn. Marsh St. John's-wort. July—Aug. 2

In a pond at Litherland. Crosby. *Dr. Bostock,* in *With.* Near Garston; and in Cheshire, not uncommon. *H. Shepherd.*

H. CALYGINUM, Linn. Large-flowered St. John's-wort. July—September. 2

In a wood, near Hale.

Withering states this to be the first English native habitat for this plant, where it was first found by *Dr. Bostock,* and subsequently by the late *Mr. J. Shepherd.* That it is a native habitat I should much doubt, but it is probably as wild as in any other part of this country, not being indigenous to Britain.

There are specimens of an *Hypericum* in the Herbarium at the Botanic Gardens, collected by the late *Mr. Shepherd* near Hoyslake and near Speak Hall, marked *dubium,* which I think on examination would prove to be merely *H. perforatum.*

ORDER XVII. ACERACEÆ. The Maple Family.

ACER, Linn. Maple. *Octandria—Monogynia.*

A. PSEUDO-PLATANUS, Linn. Sycamore. May, June. 2

In plantations and about houses, &c., but not indigenous.

ORDER XVIII. GERANIACEÆ. The Geranium Family.

GERANIUM. *Linn.* Crane's-bill. *Monodelphia—Decandria.*

G. SANGUINEUM, *Linn.* Bloody Crane's-bill. July. 2

N. shore of Liverpool. *Dr. Bostock, in With.* (Not found there now *R. Tudor.*) Sandhills, New Brighton, near the Rock Fort. Banks of the Mersey, between Seacombe and the Rock Fort. In a hedge behind the Halfway House at Egremont, very luxuriant. Along the Parkgate Shore. *Miss E. Potts.*

G. PRATENSE, *Linn.* Blue Meadow Crane's-bill. June, July. 2

In a field near Seaforth. *R. Tudor.*

G. ROBERTIANUM, *Linn.* Herb Robert. Summer. ☉

In woods, hedges, and waste places, very abundant.

The leaves, while yet green, are subject to a very pretty little parasite, *Dothidea Robertiani.* *With.*

G. MOLLE, *Linn.* Dove's-foot Crane's-bill. April—August. ☉

In meadows, on banks, waste places, &c. very abundant.

G. DISSECTUM, *Linn.* Jagged-leaved Crane's-bill. May, June. ☉

Allerton. *J. S. in Herb.* In Wirrall occasionally, but not very common.

G. COLUMBINUM, *Linn.* Long-stalked Crane's-bill. June, July. ☉

Allerton. *J. S. in Herb.* In a lane leading to Haswell. *Miss E. Potts.*

Specimens of *Geranium Phœum* were shown to me, gathered in a hedge between Egremont and New Brighton, but as I have not heard of its being met with in any other locality, I fear that it must have been an outcast from some garden.

As this is generally considered a very difficult genus, the following observations from Withering will not, perhaps, be considered as out of place.

Obs. Should the characters attempted to be principally derived from the seeds and seed-coats or capsules prove unsatisfactory or unavailable, *G. columbinum, pusillum, molle, and rotundifolium*, whose distinctions

have occasioned much trouble, may be clearly understood from attending to the following circumstances:

G. columbinum. Its awned calyx distinguishes it from *molle* and *pusillum*, and its notched petals from *rotundifolium*.

G. pusillum. Its awnless calyx distinguishes it from *columbinum*, its hairy seed coat from *molle*, and its notched petals from *rotundifolium*.

G. molle. Its awnless calyx distinguishes it from *columbinum*, its hairless and wrinkled seed coat from *pusillum*, and its notched petals from *rotundifolium*.

G. rotundifolium. Its entire petals and dotted (or, according to Smith, peculiarly reticulated) seeds, distinguish it from the other three.

Consult also an ingenious paper in *Gent. Mag.* 1797, p. 487.

ERODIUM. *L'Herit.* Stork's-bill. *Monodelphia—Pentandria*.

E. CICUTARIUM, Sm. Hemlock Stork's-bill. Summer. ☉

Very common on the sandhills near the coast, and occasionally inland.

It is sometimes found with white flowers, but apparently that arises from the colour of the corolla having faded. The plant on the sandhills, which is extremely variable, would appear to be var. 3, of Withering, which is thus described. "Hoary; flowers larger; blossom white; stems thicker; leaves not so finely cut, and covered with white hairs."

E. MARITIMUM, Sm. Sea Stork's-bill. May—Sept. ♀

Coast near Parkgate. *Turner and Dillwyn's Bot. Guide*.

Though it is some years since the *Botanist's Guide* by Turner and Dillwyn was published, still I think it very likely the above plant might be found on that part of the Cheshire coast opposite Flintshire, as *E. maritimum* is frequent in some parts of Wales, and Parkgate partakes much of the character of the Welsh Flora.

ORDER XIX. LINACEÆ. The Flax Family.

LINUM. *Linn.* Flax. *Pentandria—Pentagynia*.

L. ANGUSTIFOLIUM, Huds. Narrow-leaved Pale Flax.
July. ♀

Hill, near the Obelisk, Allerton. *J. S. in Herb. Bootle.*
R. Tudor, but not near the Landmark, as stated in *New Bot. Guide*. Very abundant by the side of some pits between Sir John Tobin's Lodge, on the New Bidston Road and the Pool. Right hand side of the old Chester Road beyond Tranmere. Hedge sides, by the footpath leading from the Wind-

mill at Upper Tranmere, to Oxton Moor. Dry fields, Wirral.
H. C. Watson.

L. CATHARTICUM, Linn. Purging Flax. June, July. ☉

Common about Bootle. Exceedingly common in dry barren fields and by waysides in Wirral.

This is an interesting little plant, rendering our fields quite white with its pretty little white flowers, which are pendulous before expansion.

L. perenne occurs now and then on heaps of rubbish, &c., both at Woodside and Bootle, but only as an outcast from gardens.

RADIOLA, Gmel. Flax-seed. *Tetrandria—Tetragynia*.

R. MILLEGRANA, Sm. Thyme-leaved Flax-seed. July, Aug. ☉

Seaforth, not uncommon. Very abundant on sandy banks in Wirral, but easily overlooked from its minuteness. Abundant on a bank on the right-hand side of the Old Bidston Road, within about a quarter of a mile of the Heath. In sandy lanes between Bidston and Oxton. Heswall Hills. Miss E. Potts.

ORDER XXI. OXALIDACEÆ. The Wood-sorrel Family.

OXALIS, Linn. Wood-sorrel. *Decandria—Pentagynia*.

O. ACETOSELLA, Linn. Common Wood-sorrel. May. ♀

Very common in woods, and occasionally in shady hedge bottoms.

SUBCLASS II. CALYCIFLORÆ.

ORDER XXIV. LEGUMINOSÆ or FABACEÆ. The Pea Family.

TRIBE LOTEÆ.

(All the following Genera belong to *Diadelphia—Decandria*.)

ULEX, Linn. Furze.

U. EUROPÆUS, Linn. Common Furze, Whin, or Gorze.
Early in Spring and throughout the Summer. ♀

On the sand hills, in hedges and in dry barren places, very abundant.

"The prickly *Gorze*, all shapeless and deformed,
And dangerous to the touch, has yet its bloom,
And decks itself with ornaments of gold."—*Cowper*.

This plant is extremely useful for many purposes, making excellent hedges near the sea, where other plants would not thrive; it is sometimes

used as fodder for horses and cattle, being bruised in a mill, and it also makes an excellent fuel for heating ovens, &c.

U. NANUS, Forst. Dwarf Furze. Mostly in Autumn. ♀

Near Everton; near Calderstones, Allerton. *H. Shepherd.*
Heswall Hills. *Miss E. Potts.* Cheshire. *H. Shepherd.*

Mr. H. Shepherd observes that this species may be known from the preceding by its flowering in the autumn, while the other usually blossoms during the spring and summer. He states it to be of a more upright and compact mode of growth.

GENISTA. Linn. Green-weed.

G. TINCTORIA, Linn. Dyer's Green-weed. July, Aug. ♀

Common in the neighbourhood of Bootle. Too common in meadows and pastures in Wirral.

Apion Genistæ inhabits this species. The poorer people in certain districts collect it by cart-loads about the month of July, when the seed of Wood-waxen proves a little harvest to them, at which women can gain two shillings per day; but it is considered a laborious occupation, the plant being drawn up by the roots, which are strongly interwoven in the soil. *With.*

G. ANGLICA, Linn. Needle Green-weed, or Petty Whin. June. ♀

Abundant on Seaforth Common. In a boggy part of a field at the foot of Bidstone Stone-quarry. On a common near Brimstage. Near Eastham. *H. Shepherd.*

CYTISUS. Linn. Cytisus or Broom.

C. SCOPARIUS, De Cand. Common Broom. June. ♀

In hedges, by the borders of fields, and in shady places.

Phalæna Pisi, Chrysomela Litura, Lamprias chlorocephala, Apion melanopum, Cassida marcida, Haltica orbiculata, Larva fascelina, Geometra rufata, feed upon it; also, more rarely, *Apion spartii*. The blossoms yield an abundant supply of honey for bees. *With.*

ONONIS. Linn. Rest-harrow.

O. ARVENSIS, Linn. Common Rest-harrow. June—Aug. ♀

Borders of fields, and by waysides, frequent.

There are specimens of a white variety, from Cheshire, in the Herbarium at the Botanic Gardens.

VAR. β. REPENS, Linn. Creeping Rest-harrow.

Common on the sand-hills on the coast.

The whole plant is very viscid, not so downy as *O. arvensis*. Its creeping habit, I believe, is merely consequent on its situation. Mr. Wilson Armistead finds it occasionally with white flowers, and remarks, that it is often much buried among the loose sand, which may be the cause of the colourless flowers, being in a great measure deprived of sun and air.

O. SPINOSA, De Cand. Thorny Rest-harrow. June—
Aug. 24

In similar situations to the first species. On clay banks between Egremont and New Brighton, (sometimes with dark red flowers.) Among gorze bushes by the side of Wallasey Pool. Little Sutton. *R. Slack.*

Several excellent botanists consider the present plant quite distinct from the smooth one, (*β. inermis*), and Mr. H. Shepherd informs me that the two have been cultivated in the Botanic Garden for many years, without evincing the slightest tendency to approach each other in their respective characters. This plant is *Ononis antiquorum* of Linneus. See an excellent article on the specific identity of these plants in the Annals of Natural History for October 1838, by Edward Foster, F.R.S., V.P.L.S.

ANTHYLLIS. Linn. Kidney-vetch.

A. VULNERARIA, Linn. Common Kidney-vetch. June—
Aug. 24

Common on the sand-hills on the coast.

MEDICAGO. Linn. Medick.

M. SATIVA, Linn. Purple Medick or Lucerne. June,
July. 24

Occasionally by the side of fields, &c. about Bootle.

M. LUPULINA, Linn. Black Medick, or Nonsuch. May—
August. ☉

By road sides, and in waste ground, abundant.

MELILOTUS. Tourn. Melilot.

M. OFFICINALIS, Linn. Common Yellow Melilot. June,
July. ☉

Near Speake Hall. *J. S. in Herb.* Near the Oil Mill at Otterspool, and near the Dingle, but probably not wild. *H. Shepherd.*
In a hedge at Little Sutton, near a wood, plentiful.

There are specimens in the Herbarium at the Botanic Gardens marked *T. officinalis*, var. *flore albo*, which I take to be *leucantha*. They were found by the late Mr. J. Shepherd, on the road between the meadows and the Waterloo Hotel, leading from the Canal, in August 1828, and there is the following remark attached to them: "In habit much like *T. officinale*,

but the flower perfectly white. Sir J. E. Smith takes no notice of any variety with white flowers. I suspect it is foreign." Not being acquainted with the above discovery, Sir W. J. Hooker, remarks, in his British Flora, that it is singular that *M. leucantha* should never have been noticed, even as a variety of *M. officinalis*, by any British Botanist.

TRIFOLIUM. *Linn.* Trefoil.

T. ARVENSE, *Linn.* Hare's-foot Trefoil. July, Aug. ☉

Common about Bootle, &c. Abundant about Wallasey, and between Wallasey and New Brighton.

When growing exposed to the sea breezes, it becomes var. 2 of Withering, ("Dwarf and densely silky.") Col. Velley remarks that the figure in the Flora Londinensis is taken from a luxuriant specimen; and that the heads in the Flora Danica are poorly executed.

T. ORNITHOPODIOIDES, *Linn.* Bird's-foot Trefoil. June. ☉

Waste ground along the Parkgate Shore. *Miss E. Potts.*

T. REPENS, *Linn.* White Trefoil or Dutch Clover. Summer. ♀

Meadows and pastures, frequent.

The var. 3 of Withering ("proliferous, small heads of leaves growing out of the flowers") is common in damp situations at Bootle, and elsewhere.

T. SUBTERRANEUM, *Linn.* Subterraneous Trefoil. May. ☉

Waste ground along the Parkgate Shore. *Miss E. Potts.*

T. PRATENSE, *Linn.* Common Purple Clover. Summer. ♀

In meadows and pastures.

T. MEDIUM, *Linn.* Zigzag Trefoil. July. ♀

Clay banks, shore of the Mersey, very common. Banks between Egremont and New Brighton, between New Ferry and Eastham, &c. Common inland. *Dr. Dickinson.*

T. SCABRUM, *Linn.* Rough Rigid Trefoil. May, June. ☉

Near the Tide Mill Dam, South shore of Liverpool. *J. S. in Herb.* (now destroyed.) Waste ground along the Parkgate Shore. *Miss E. Potts.*

T. FRAGIFERUM, *Linn.* Strawberry-headed Trefoil. July, August. ♀

Common along the North Shore, at Bootle, &c., in damp sandy situations. Bidston Marsh.

T. PROCUMBRUS, Linn. Hop Trefoil. June, July. ☉

In meadows and pastures and by way-sides, frequent.

T. FILIFORME, Linn. Lesser Yellow Trefoil. June, July. ☉

In dry barren fields and by way-sides, very abundant.

Of this plant there are two varieties, equally common in similar situations, and kept distinct by some authors. The larger one is *var. a. major*, *T. minus*, Sm. Lind., the other is *β. microphyllum*, *T. filiforme*, Sm. Lind.

There are specimens in the Herbarium at the Botanic Gardens, marked *T. glomeratum*? from near the Obelisk, Allerton, 1805, which, Mr. Shepherd informs me, are *T. striatum*.

LOTUS. Linn. Bird's-foot Trefoil.

L. CORNICULATUS, Linn. Common Bird's-foot Trefoil.
July, Aug. 24

Very abundant on the sand-hills on the coast, as well as inland.

In poor, barren soil the above plant has a more slender and straggling habit, and narrower foliage, and becomes *L. tenuis* of the British Flora. I have gathered specimens among the stones, by the side of the new Bidston road, just beyond Gilbrook. The flowers become greenish when dried; in which respect they resemble those of the plants which produce indigo. *Thrips Physapus* is found upon it, also *Apion Loti*. The minute gall-knat, *Tipula Loti*, sometimes inhabits the blossom, and strangely metamorphoses its appearance. It is likewise a favourite food of the caterpillar of the white butterfly, *Leucophasia Sinapis*.

L. MAJOR, Scop. Greater Bird's-foot Trefoil. July, Aug. 24

Common in moist shady places, and by the side of ditches.

This plant, though easily recognised from *L. corniculatus*, can hardly be considered distinct. The situation in which I have usually found it would, I think, account for the difference.

TRIBE HEDYSARÆÆ.

ORNITHOPUS. Linn. Bird's-foot.

O. PERPUSILLUS, Linn. Common Bird's-foot. June. ☉

Common about Liverpool, as Toxteth Park, Bootle, &c. In dry heathy soil, common, as about Bidston, Oxtun, Walasey, &c.

A beautiful little plant, very variable in size. When in flower, in spring, the branches scarcely extend an inch; and at the latter end of

summer, when in seed, they reach to nearly a foot. It grows very small on the summit of Bidston Hill, close to the Light-house, where the red sandstone has just a slight covering of soil.

TRIBE VICIÆ.

VICIA. *Linn.* Vetch.

V. CRACCA, *Linn.* Tufted Vetch. July, August. 24

In hedges and shady places, very frequent.

This plant is of no value as a fodder, but exceedingly ornamental to our hedges, where

“Purple tassels of the tangling vetch
Hang elegant.”

V. SATIVA, *Linn.* Common Vetch. June. ☉

By the side of meadows and cornfields, frequent.

Livia Craccæ frequents this species. Dr. Bevan observes that not only the flowers, but the young spotted leaves of vetches, are peculiarly attractive to Bees; a predilection in these natural chemists conjectured to arise from the injured or diseased parts exuding a honied secretion.

V. ANGUSTIFOLIA. *Sibth.* Narrow-leaved Crimson Vetch. June. ☉

In dry pastures and barren places, frequent.

V. LATHYROIDES, *Linn.* Spring Vetch. April, May. ☉

Common about Bootle. About the Magazines, and about Wallasey, between there and New Brighton, in light sandy soil, frequent.

It is very difficult to distinguish between this and certain states of the former species; if this, however, be found in spring, when it first comes into flower, it is very distinct, and much smaller in all its parts. The species of this genus in the Herbarium at the Botanic Gardens are very much confused by the late Mr. J. Shepherd, who, it would appear from some remarks in the Herbarium, was not aware that the species or variety *angustifolia* had been noticed. There are also specimens marked *V. lathyroides*, which ought to be named *V. angustifolia*. I am therefore unable to avail myself of any of the localities, which, however, is the less to be regretted, as the plants are pretty widely diffused in these neighbourhoods.

V. SEPIUM, *Linn.* Bush Vetch. June, July. 24

In woods, hedges, and shady places, frequent.

Apion (Curculio) subsulcatum is found upon it, and the seeds are generally devoured by the larvæ of a species of *Attelabus*, probably *A. punctiger (Apion punctifrons, Kirby)*, is said to resort to this vetch only. With.

ERVUM. *Linn.* Tare.E. HIRSUTUM, *Linn.* Hairy Tare. June. ☉

By the side of fields, and in hedge sides, occasionally.

E. TETRASPERMUM, *Linn.* Smooth Tare. June. ☉Crosby. *J. S. in Herb.* In similar situations with the preceding, but not so frequent. In a pit by the lane side at Knowles', Claughton.LATHYRUS, *Linn.* Vetchling.L. PRATENSIS, *Linn.* Meadow Vetchling. July, Aug. ♀

Very common in hedges and by road sides.

Apion Ervi and *Lathyri*, according to Kirby, are found upon this species; also the caterpillar of the white butterfly, *Leucophasia Sinapis*, feeds upon it.—*With.*OROBUS. *Linn.* Bitter Vetch.O. TUBEROSUS, *Linn.* Tuberous Bitter Vetch. May,
June. ♀

In woods and shady places, common.

The roots, when boiled, are savoury and nutritious; ground to powder they may be made into bread.—*With.*

ORDER XXV. ROSACEÆ. The Rose Family.

TRIBE AMYGDALÆ.

PRUNUS, *Linn.* Plum and Cherry. *Icosandria—Monogynia.*P. DOMESTICA, *Linn.* Wild Plum-tree. May. ♀In hedges occasionally. *Dr. Dickinson.*P. INSITITIA, *Linn.* Wild Bullace-tree. May. ♀In hedges occasionally. *Dr. Dickinson.*P. SPINOSA, *Linn.* Black-thorn or Sloe. April, May. ♀

In hedges, very common.

Puccinea Pruni will frequently be found scattered, in minute yellow spots, on the under side of the leaves, especially during autumn. *Xyloma rubrum* pervades the substance to both sides; and *Sphæria Prunastri* may be observed on the decaying branches about the month of April.
With.

P. PADUS, Linn. Bird Cherry. May. ♀

Common in hedges about Liverpool, but planted there. *Dr. Dickinson.*

Erineum Padi, "in distinct roundish patches, whitish when young, changing to orange and deep brown," may be observed on the leaves. *With.*

P. CERASUS, Linn. Wild Cherry. May. ♀

Seacombe, by pits. *H. C. Watson.*

Livia Cerasi may be detected on this tree. *With.* The double-blossomed variety, whose multiply and snow-white petals, displayed on long, slender footstalks, obtain universal admiration, is very common in gardens, and a great ornament to them in the early part of the summer.

TRIBE SPIRÆÆ.

SPIRÆA, Linn. Meadow Sweet. *Icosandria—Pentagynia.***S. ULMARIA, Linn.** Queen of the Meadows. July. ♀

Moist meadows, and by the side of ponds and ditches, very common.

In the few countries where primitive manners are yet to be observed, the custom of scattering fragrant herbs on floors remains; and for such purpose Meadow-sweet has ever been highly extolled. Some compare the scent to that of Hawthorn, but to our senses it is more sickly. *Sphinx ocellata* and *Filipendula* feed upon it. *With.*

TRIBE DRYADEÆ.

GEUM, Linn. Avens. *Icosandria—Polygynia.***G. URBANUM, Linn.** Common Avens. June. ♀

Woods and hedges, frequent.

G. RIVALE, Linn. Water Avens. June, July. ♀

Plentiful by the side of a brook, which runs through the meadows below Childwall Abbey. *Dr. Dickinson.*

This is a most interesting addition to our Flora, and I trust that it may be discovered in other localities. "The rich combination of the dark-green wrinkled leaves, with the glowing red brown of the stem and calyx, and singularly delicate colour of the petals, added to the graceful position of the flowers, renders this one of the most picturesque of our native plants."

RUBUS, Linn. Bramble. *Icosandria—Polygynia.***R. IDÆUS, Linn.** Raspberry. May, June. ♀

Wirral. *H. C. Watson.*

The foliage suffers from the attacks of a little beetle, *Melolontha horticola*; when in flower the footstalks are sometimes eaten through by the minute *Dermestes tomentosus*; and bees frequently anticipate us by sucking the fruit with their proboscis. *With.*

R. NITIDUS, E. Fl. Smooth Shining Bramble. July, Aug. ♀

Eastham Wood. *H. C. Watson.*

R. CARPINIFOLIUS, W. & N. Hornbeam-leaved Bramble.
July, Aug. ♀

Cheshire and Lancashire. *W. Wilson, in Br. Fl.*

R. FRUTICOSUS, Linn. Common Bramble or Blackberry.
July, Aug. ♀

Common in hedges.

In the Journal of a Naturalist, we find represented (Pl. iv. f. 3.) what may be frequently observed to disfigure the leaves of this plant, viz. a strongly defined line, meandering over the surface, with a fine intestinal-like canal running through the centre. This sinuous course proves to be the pathway of a small caterpillar, (of the tribe *Mineuses* of Reaumur,) which lives upon the parenchyma, or pulpy substance found between the cuticles of the leaves, gradually increasing in size, until matured for transformation to the chrysalis, when the insect cuts its way through the leaf, ultimately becoming a moth, remarkable for the brilliant metallic lustre of its wings, the fine central line being the rejectments of the creature in the infant stages of its growth. The leaves are often spotted yellow or brown by *Puccinia Rosæ*. *Hecla rubi* will also be found upon them.

R. CORYLIFOLIUS, Sm. Hazel-leaved Bramble. July, Aug. ♀

Common in hedges. *Dr. Dickinson.*

R. CÆSIUS, Linn. Dewberry. June, July. ♀

Very common on the sand-hills on the coast, Bidston Stone-quarry. *H. C. Watson.*

Of about twenty species usually enumerated in our Floras. Professor Henslow considers that perhaps seven may be true species, viz. *idæus*, *cæsius*, *corylifolius*, *fruticosus*, *saxatilis*, *arcticus*, and *chamæmorus*, the rest being merely varieties or some perhaps sub-species.

FRAGARIA, Linn. Strawberry. *Icosandria—Polygynia.*

F. VESCA, Linn. Wood Strawberry. May—July. 24

Woods and shady places, inland, frequent.

Cicada spumaria, (Cuckoo-spit, or Froth-worm,) enveloped in a spume exuded by itself, may frequently be observed on the leaves.

POTENTILLA. *Linn.* Cinque-foil. *Icosandria—Polygynia.*

P. ANSERINA, *Linn.* Silver-weed. June, July. 24

Sides of paths, and roads, and in low meadows, abundant,

P. REPTANS, *Linn.* Common Creeping Cinque-foil. June—
Aug. 24

In meadows, and by roadsides, common.

P. FRAGARIASTRUM, *Ehrh.* Strawberry-leaved Cinque-
foil. March, April. 24

Barren pastures, and on dry hedge banks, very common.

Uredo Fragaria may be found on the under side of the leaves of this plant, as well as *F. vesca*.

TORMENTILLA. *Lin.* Tormentill. *Icosandria—Polygynia.*

T. OFFICINALIS, *Sm.* Common Tormentil. June, July. 24

In heathy, and shady places, common.

In a moist place near Bidston Stone-quarry, a friend, who was botanizing with me, found some specimens, with double flowers, like little yellow roses.

I have had specimens shown to me from the neighbourhood of Woodside that I cannot refer either to *Tormentilla officinalis*, or *Potentilla reptans*, being more like the latter plant; I suspect they are the plant indicated as *T. reptans* in the British Flora, which is inserted in Withering, as growing near Bootle Land-mark, on the authority of Dr. Bostock.

COMARUM. *Linn.* Marsh Cinque-foil. *Icosandria—Polygynia.*

C. PATUSTRE, *Linn.* Purple Marsh Cinque-foil. July. 24

Frequent in marshy places, and in ponds, &c., near Liverpool.
Common, near Woodside.

AGRIMONIA, *Linn.* Agrimony. *Dodecandria—Digynia.*

A. EUPATORIA, *Linn.* Common Agrimony. June, July.

In meadows, and by way sides, frequent.

TRIBE ROSEÆ.

ROSA. *Linn.* Rose. *Icosandria—Polygynia.*

R. SPINOSISSIMA, Linn. Burnet-leaved Rose. May. ♀

Very abundant on the sand-hills on the shores of the Mersey.

This plant seems to approach var. 3. of Withering, except that I cannot discover that the fruit-stalks are prickly. I have observed that on the sand-hills on the Cheshire and Lancashire coast it covers several acres of sand, to the exclusion of every other vegetable. In autumn the foliage has a reddish or purplish hue. A very interesting insect, *Anomala Horticola*, may be found in great abundance on the corolla of this plant during the summer.

R. CANINA, Linn. Common Dog-Rose. June, July. ♀

Hedges and woods, frequent.

R. ARVENSIS, Huds. Trailing Dog-Rose. June, July. ♀

Hedges, and woods, more frequent than the last.

On the branches of the various species may be observed those moss-like fibrous excrescences, the habitations of the *Cynips Rosæ*. The leaves are often cut in a semi-circular form by the Leafcutter Bees, who use the portions of the leaves to line their cells. Towards autumn, scattered on the under side of the leaf, may be found the minute fungus, *Puccinia Rosæ*, and different parts of the living plant are often infested with whitish tufts of *Erotium Rosarum*. Of about twenty species usually described in our Floras, Professor Henslow considers that probably seven may prove to be true species.

In the Herbarium at the Botanic Gardens is a specimen from Bootle, marked *Rosa tomentosa*?

TRIBE SANGUISORBEÆ.

ALCHEMILLA, Linn. Lady's Mantle. *Tetrandria—Monogynia*.

A. VULGARIS, Linn. Common Lady's Mantle. June, July. ♀

In meadows, not uncommon.

A. ARVENSIS, Sm. Field Ladies' Mantle. May—July. ♂

By roadsides in dry situations, not uncommon.

TRIBE POMEÆ.

CRATÆGUS, Linn. Hawthorn. *Icosandria—Pentagynia*.

C. OXYACANTHA, Linn. Hawthorn, or May. May, June. ♀.

In hedges and woods, frequent.

PYRUS. *Linn.* Pear, Apple, and Service. *Icosandria—Pentagynia.*

P. MALUS, *Linn.* Crab-Apple. May. 2

In hedges, &c. frequent.

P. AUCUPARIA, *Gærtn.* Mountain-ash. May, June. 2

Near Bootle. *Dr. Dickinson.* Side of Bidstone Stone-quarry, apparently quite wild.

Æcidium cornutum is very frequent on the inferior surface of the leaves in Summer and Autumn; and on both sides may be found *Erineum Sorbi*. *With.*

P. TORMINALIS, *Sm.* Wild Service-tree. April, May. 2

On the rocks of Knot's-hole, near Liverpool, in a situation quite exposed to the salt-water, and where it must occasionally be washed by the spray of the sea. *Dr. Bostock, in With.* Recently observed there by Mr. H. Shepherd.

ORDER XXVI. ONAGRACEÆ. The Willow Herb Family.

EPILOBIUM, *Linn.* Willow-herb. *Octandria—Monogynia.*

E. HIRSUTUM, *Linn.* Great Hairy Willow-herb. July. 2

By the sides of ditches and ponds, very common.

The top shoots have a delicate acidulous fragrance resembling scalded codlings, whence one of its English names, Codlings and Cream.

E. PARVIFLORUM, *Schreb.* Small-flowered Willow-herb.
July. 2

In similar situations with the preceding, equally common.

E. MONTANUM, *Linn.* Broad Smooth-leaved Willow-herb.
July. 2

Common near Liverpool. *Dr. Dickinson.* Common in Wirral. *H. C. Watson.*

Colonel Velley remarks that the bases of the leaves do not unite, as represented in the *Flora Londinensis*.

E. PALUSTRE, *Linn.* Narrow-leaved Marsh Willow-herb.
July. 2

In marsh places not uncommon. *Formby. R. Tudor.* Near Liverpool. *J. S. in Herb.* Little Sutton. *R. Slack.* Very abundant on Bidston Marsh.

ŒNOTHERA. *Linn.* Evening Primrose. *Octandria—Monogynia.*

Œ. BIENNIS, *Linn.* Common Evening Primrose. July—September. ♂

Sand-hills on the shore about four miles north of Liverpool ; sand-hills at Formby very plentiful.

It is stated in the English Flora that this plant is "truly wild on the dreary sands of the Lancashire coast ; being planted there by the hand of Nature, though perhaps transported, by natural means, from the other side of the Atlantic." It has, however, with much more probability, originally been an outcast from a garden, and, as it seeds so freely, it has in the course of time established itself extensively over our sand-hills.

"This plant is a native of North America, in Virginia, Canada, and on the North-west coast, from whence it migrated to Europe about the year 1604, and is now found apparently wild in some parts of England, especially in Lancashire and Suffolk. It is very common in gardens, where it is well adapted to the shrubbery. The flowers generally open in the evening, just as the sun sinks below the horizon. This opening is effected by a very sudden retraction of the segments of the limb of the calyx, which are forcibly thrown against its tube, and followed by an immediate expansion of the petals." *Baxter.*

CIRCEA. *Linn.* Enchanter's Nightshade. *Diandria—Monogynia.*

C. LUTETIANA, *Linn.* Common Enchanter's Nightshade. June, July. ♀

Speak Hall. *J. S. in Herb.* Mr. Blackburn's woods at Hale ; and woods at Eastham, rather inland. *H. Shepherd.*

ORDER XXVII. HALORAGACEÆ. The Water Milfoil Family.

MYRIOPHYLLUM, *Linn.* Water Milfoil. *Monoecia—Polyandria.*

M. SPICATUM, *Linn.* Spiked Water Milfoil. July. ♀

In ponds, frequent.

M. VERTICILLATUM, *Linn.* Whorled Water Milfoil. July. ♀

Near Crosby. *J. S. in Herb.* In pits close to Parkgate. *Miss E. Potts.* Cheshire. *Mr. Wilson, in Br. Fl.*

HIPPURIS. *Linn.* Mare's-Tail. *Diandria—Monogynia.*

H. VULGARIS, *Linn.* Common Mare's Tail. June, July. ♀

In ditches and stagnant water, frequent. Crosby ; and in the moss ditches about Formby. Plentiful on Bidston Marsh. Near New Brighton at the back of the sand-hills. *A. Higginson*. Egremont. *H. C. Watson*.

This plant contributes, in common with many others, to the purification of air in standing waters.

CALLITRICHE. *Linn.* Water-starwort. *Monoecia—Monandria*.

C. Verna, *Linn.* Vernal Water-starwort. April, May. ☉

In ditches and ponds, very common.

C. AUTUMNALIS, *Linn.* Autumnal Water-starwort. June—October. ☉

Cheshire. *In Herb.* In deep ditches by the side of the road between Bidston and Leasowe?

ORDER XXIX. LYTHRACEÆ. The Loosestrife Family.

LYTHRUM. *Linn.* Purple Loosestrife. *Dodecandria—Monogynia*.

L. SALICARIA, *Linn.* Spiked Purple Loosestrife. July. ♀

Watery places, and by the side of ponds and ditches, frequent.

I have specimens from Gilbrook with a quadrangular stem and two opposite leaves ; and from Bootle I have it with the stem six-angled, with the leaves three in a whorl.

PEPLIS. *Linn.* Purslane. *Hexandria—Monogynia*.

P. PORTULA, *Linn.* Water Purslane. July, Aug. ☉

In watery places, not common. Kirkby. *R. Tudor*. Heswall Hills. *Miss E. Potts*. Ditches near Bidston Hill.

ORDER XXXII. PORTULACÆÆ. The Purslane Family.

MONTIA. *Linn.* Blinks. *Triandria—Trigynia*.

M. FONTANA, *Linn.* Water Blinks or Water Chickweed. June, July. ☉

In wet boggy places, and by the side of ditches, common.

ORDER XXXIII. ILLECEBRACEÆ. The Knot-grass Family.

SCLERANTHUS. *Linn.* Knawel. *Diccandria—Digynia*.

S. ANNUUS, Linn. Annual Knawel. July. 24

In corn fields, and sandy lanes, frequent.

ORDER XXXIV. CRASSULACEÆ. The Houseleek Family.

COTYLEDON, Linn. Pennywort. *Decandria—Pentagynia.*

C. UMBILICUS, Huds. Wall Pennywort. June—Aug. 24

On walls, and occasionally on banks, not uncommon. On old walls about Liverpool. *Dr. Bostock, and Mr. Shepherd, in With.* On the walls of Wallasey Church Yard. In lanes about Poulton, and between Egremont and New Brighton. In lanes about Claughton Hall, near Woodside.

SEDUM, Linn. Orpine and Stonecrop. *Decandria—Pentagynia.*

S. TELEPHIUM, Linn. Orpine or Live-long. July. 24

About Bootle, not uncommon. *R. Tudor.* In lanes about Oxtun. In the road leading from Tranmere to Prenton. In a lane at the back of Tranmere church.

S. ACRE, Linn. Biting Stonecrop or Wall Pepper. June. 24

Very common on the sand-hills, on the shores of the Mersey, as well as on banks, walls, &c. inland.

S. REFLEXUM, Linn. Crooked Yellow Stonecrop. July. 24

On walls, thatched buildings, and banks, occasionally. On the roof of a pigsty at Tranmere, opposite a public house. On a bank at the back of Claughton Hall.

Mr. H. Shepherd informs me that he once found *S. anglicum* on a bank between Cabbage Hall, and Walton Priory, near the former place; it is also found at Southport, according to the Guide to Southport.

S. villosum is inserted in Withering as occurring near Bootle, on the authority of Mr. James Roscoe.

SEMPERVIVUM, Linn. Houseleek. *Dodecandria—Dodecagynia.*

S. TECTORUM, Linn. Common Houseleek. July. 24

On walls, and thatched roofs, occasionally.

ORDER XXXV. GROSSULARACEÆ. The Gooseberry Family.

RIBES. *Linn.* Currant and Gooseberry. *Pentandria—Monogynia.*

R. GROSSULARIA, *Linn.* Common Gooseberry. July. 2
In hedges, occasionally, but seldom very far from houses or gardens.

ORDERXXXVI.SAXIFRAGACEÆ.TheSaxifrageFamily.

SAXIFRAGA. *Linn.* Saxifrage. *Decandria—Digynia.*

S. TRIDACTYLITES, *Linn.* Rue-leaved Saxifrage. May, June. ☉

Common on the sand-hills on the shores of the Mersey, and occasionally on old walls inland.

This is scarcely an inch high on our sand-hills, with the leaves simply cuneate, and not 3-5-fid. as described in the British Flora.

Saxifraga granulata occurs in Woolton Park in great abundance, but with double flowers. I therefore consider it to have been planted there.

CHRYSOSPLENIUM, *Linn.* Golden Saxifrage. *Decandria—Digynia.*

C. OPPOSITIFOLIUM, *Linn.* Common Golden Saxifrage. July. 2

In moist shady places, frequent.

ORDERXXXVII. UMBELLIFERÆ or APIACEÆ. The Umbelliferous Family.

(All the following Genera belong to *Pentandria—Digynia.*)

SUB-ORDER. ORTHOSPERMÆ.

HYDROCOTYLE. *Linn.* White-rot.

H. VULGARIS, *Linn.* Common White-rot. May, June. 2
In wet places, by the sides of ponds and ditches, very common.

SANICULA. *Linn.* Sanicle.

S. EUROPÆA, *Linn.* Wood Sanicle. May, June. 2
In woods and shady places, common.

Col. Vellej remarks that the universal involucre is diphyllous, and that the smaller one has several leaves. The flowers are sessile.

ERYNGIUM, *Linn.* Eryngo.

E. MARITIMUM, *Linn.* Sea Eryngo, or Sea Holly. July,
Aug. 24

Common on the sand-hills on the shores of the Mersey.

Very beautiful skeletons may be made of the leaves of this plant, by maceration in water till the fleshy part of the leaf is destroyed, and nothing but the woody fibre remains. The plant after flowering, bleached by the sun, may be observed late in the season.

APIUM. *Linn.* Celery.

A. GRAVEOLENS, *Linn.* Smallage or Wild Celery. Aug. ♂

Muddy inlets of the Mersey, common. In marshy grounds near Kimrose Bridge, Bootle. Parkshore, near Liverpool, *in With.* Wallasey and Bromboro' Pool; Bidston Marsh.

HELOSCIADIUM. *Koch.* Marsh-wort.

H. NODIFLORUM, *Koch.* Procumbent Marsh-wort. July,
Aug. 24

In ditches and marshy places, very common.

The umbels of this species being nearly sessile will distinguish it from *Sium angustifolium*, with which it is often found growing.

H. INUNDATUM, *Koch.* Least Marsh-wort. May, July. ♂ ?

In ponds, frequent; but not so common as the preceding species.

If not seen in flower, the submerged leaves may be mistaken for those of *Ranunculus aquatilis*.

ÆGOPODIUM. *Linn.* Gout-weed.

Æ. PODOGRARIA, *Linn.* Gout-weed, or Herb Gerarde.
May, June. 24

In a wood by the road-side at Fazakarley.

As this is by no means a rare plant in moist, shady situations, it may doubtless be found in other localities.

BUNIUM. *Koch.* Earth-nut.

B. FLEXUOSUM, *With.* Common Earth-nut. May, June. 24

In woods and pastures, very common.

PIMPINELLA. *Linn.* Burnet-Saxifrage.

P. SAXIFRAGA, Lin. Common Burnet-Saxifrage. July, Aug.

Crosby sand-banks. *J. S. in Herb.* Bootle. *R. Tudor.* On a bank, between Seacombe and Egremont, by the side of the Mersey. Amongst gorze bushes about Bidston Light-house. Formerly on a bank near the Catholic Chapel, Woodside. *H. C. Watson.*

The above species is one of the most difficult among this natural family to be defined as to its foliage. In some specimens all the leaves resemble those of Burnet, as given in Morison's figure. *Col. Velley's MS. notes.*

P. MAGNA, Linn. Greater Burnet-Saxifrage. July, Aug. ♀

Plentiful among gorze-bushes between New Brighton and Wallasey. Frequent in Cheshire. *W. Wilson.*

Jacquin's figure is good and characteristic. He notices the acute form of the foliola. Dr. Smith describes this plant, "*foliolis omnibus ovatis.*" This plant has no involucre. *Col. Velley's MS. notes.*

SIUM, Linn. Water Parsnep.**S. ANGUSTIFOLIUM, Linn.** Narrow-leaved Water Parsnep.
July, August. ♀

In ponds, and watery places, not uncommon.

I think the small leaves are better distinguished by the unequal serratures than by their breadth. Mr. Hudson, in his first edition, named it *erectum*, after Ray's Synopsis, but the *S. latifolium* is so likewise. The umbels in this species are mostly axillary; in the other, terminal. Jacquin's figure is admirable. *Col. Velley's MS. notes.*

ŒNANTHE, Linn. Water Drop-wort.**Œ. FISTULOSA, Linn.** Common Water-Dropwort. July,
August. ♀

In ponds, and ditches, very common.

Œ. PIMPINELLOIDES, Linn. Parsley Water Dropwort.
July. ♀

Bootle. *R. Tudor.* Crosby Marsh. *H. Shepherd.* Wallasey Pool, very abundant.

In Withering, among other localities for this plant, is inserted "occasionally in ponds about Liverpool." *H. Shepherd.* This must certainly be incorrect, as the usual situation of the plant is in salt-marshes, where it is very abundant, and quite distinct from *Œ. fistulosa*, which is generally found in ponds, and the only one that it is likely to be confounded with in the neighbourhood of Liverpool.

Œ. CROCAT, Linn. Hemlock Water Dropwort. July. ♀

In ditches, and watery places, common.

Æ. PHELLANDRIUM, Spreng. Fine-leaved Water Dropwort. July. ۲

Allerton. *J. S. in Herb.*

The second division of the leaves is very much divaricated; much more so than in any other umbelliferous plant that I have met with. I believe Dr. Woodville observes, that the secondary leaves grow nearly at right angles. This mode of growth is well represented in Dodoen's figure, from whence Gerard's. *Col. Velley's MS. notes.*

There are specimens in the Herbarium at the Botanic Gardens, from the neighbourhood of Liverpool, marked *Ænanthe peucedanifolia*. They are barely four inches high, apparently stunted specimens of *Æ. pimpinelloides*.

ÆTHUSA. Linn. Fool's Parsley.

Æ. CYNAPIUM, Linn. Common Fool's Parsley. July, Aug. ☉

In waste and cultivated ground, very common.

SILAUS. Besser. Pepper Saxifrage.

S. PRATENSIS, Besser. Meadow Pepper Saxifrage. July—Sept. ۲

Plentiful among the gorze bushes by the side of Wallasey Pool, beyond the Boiler Yard. Between Seacombe and Poulton, by the wooden bridge that crosses an inlet of the Pool, in 1836. Sutton. *R. Slack.*

This I have no doubt is a common plant about Liverpool, but overlooked on account of the general resemblance of the umbelliferous plants. There are specimens gathered by Mr. Shepherd in 1828 from the first named locality, put in the same paper with *Peucedanum officinalis*, but marked (?).

ANGELICA. Linn. Angelica.

A. SYLVESTRIS, Linn. Wild Angelica. July. ۲

In moist and shady places, and ditches, frequent.

Dr. Woodville has given the foliola more acute than I have found them. Dodoens (whose figure is copied in Gerard) has represented the character, but has given an involucre of several short leaves, instead of one, or perhaps two, very slender filiforme leaves. *Col. Velley's MS. notes.*

PASTINACA. Linn. Parsnep.

P. SATIVA, Linn. Common Wild Parsnep. July. ♂

Crosby, along with *Æ. biennis*. Hoylake. *R. Tudor.* Near Parkgate. *Miss E. Potts.*

HERACLEUM. *Linn.* Cow Parsnep.H. SPONDYLIIUM, *Linn.* Common Cow Parsnep. July. ♂

In hedges and pastures, very abundant.

DAUCUS. *Linn.* Carrot.D. CAROTA, *Linn.* Wild Carrot. July. ♂

In dry barren fields, waste places, and by way-sides, very common.

Gærtner considers *D. maritimus* as a distinct species from this. He refers to Mor. H. O. where it is mentioned at p. 308, v. 2, as a native of the coast of Narbon, and probably different from *D. maritimus* of Dr. Smith, Fl. Br. 300, where it is introduced only as a variety of the species before us. *Col. Velley's MS. notes.* I believe it is still the opinion of many excellent botanists that the true *D. maritimus* does not grow in England, and what is usually taken for it, is only a maritime variety of *D. carota*. There are specimens of *D. carota* from Hoylake, in the Herbarium at the Botanic Gardens, marked *D. maritimus* (?); they appear more hirsute than the ordinary state of *D. carota*.

About Bootle, both inland and among the sand-hills, I have sometimes found *Faniculum vulgare*, but it is merely an outcast from gardens. Mr. H. Shepherd informs me that *Carum Carui* has been observed by him near Mosley Hill.

SUB-ORDER. CAMPYLOSPERMÆ.

TORILIS, *Adans.* Hedge Parsley.T. ANTHRISCUS, *Gærtn.* Upright Hedge Parsley. July. ☉

In hedges, and by way-sides, frequent.

This bears a strong resemblance to *C. infesta*, but is a taller plant. The florets are sometimes tinged with red. The petals are nearly equal in size, but in the *infesta* the two outer ones are the largest. The branch and leaf in the *Flora Danica* are well designed. *Col. Velley's MS. notes.*

T. INFESTA, *Spr.* Spreading Hedge Parsley. July. ☉In similar situations, equally common. *H. Shepherd.*T. NODOSA, *Gærtn.* Knotted Hedge Parsley. May, June. ☉

Waste places, and by the sides of fields, frequent. Common about Little Sutton.

The specimens I have of this plant from Little Sutton are much larger than Welsh specimens, which I possess through the kindness of Mr. Tudor. *Col. Velley* remarks that the leaves are deeply incised, and have short white bristles; and that the umbels grow like knots opposite the leaves.

SCANDIX. *Linn.* Shepherd's-Needle.

S. PECTEN, *Linn.* Needle-chervil, or Venus'-comb. June, July. ☉

Corn fields and waste places, common.

Col. Velley remarks that the figure in Fl. Aust. will perhaps be preferred to that in the Flora Londinensis, the latter being too formal, and the seed vessels very large and luxuriant.

ANTHRISCUS. *Pers.* Beaked Parsley.

A. SYLVESTRIS, *Koch.* Wild Beaked Parsley. April—June. ♀

Hedges and borders of fields, very common.

A. VULGARIS, *Pers.* Common Beaked Parsley. May, June. ☉

In waste places, about villages, or near farm-houses, common.

The character and general habit is admirably expressed in the figure of the Fl. Aust. Mr. Curtis's figure in Fl. Lond. is also good, but the pinnulæ of the leaves are not so finely divided in the latter as they appear in nature; this objection extends to the Fl. Dan. The extreme lobes are not sufficiently ovate in most of the figures. Columna's engraving, although so very ancient, represents the seed vessels with great accuracy. *Col. Velley's MS. notes.*

CONIUM. *Linn.* Hemlock.

C. MACULATUM, *Linn.* Common Hemlock. June, July. ♂

In waste ground, and by roadsides, not uncommon.

This plant is well known by the purple spots on the stems. Gærtner has given the most permanent distinctions in this natural family, finely delineated in the several fructifications. The character of the plant is beautifully given in the Fl. Aust. Some part of the figure in the Fl. Lond. bears a strong resemblance to Jacquin's figure, and almost seems copied. *Col. Velley's MS. notes.*

SMYRNIUM. *Linn.* Alexanders.

S. OLUSATRUM, *Linn.* Common Alexanders. May, June. ♂

Shore of the Mersey, opposite Liverpool, sparingly. *H. W. in New Bot. Guide.* At Poulton,* in a moist place, where a

* The village of Poulton, mentioned in this work, is properly called Poulton-cum-Seacombe. It lies in a low situation on the banks of the rivulet called the Birken, interspersed with trees, which are screened from the sea breezes by the high grounds of Wallasey. There is another Poulton, called Poulton-cum-Spittal, or Poulton Lancelyn, which is situate at the S.E. extremity of the parish of Bebington, on the bank of a deep and richly wooded dingle, presenting a scene of sequestered beauty.

stream of water joins Wallasey Pool, opposite a small public house called the "Poulton Hotel."

Specimens of this plant are mixed in the Herbarium at the Botanic Gardens with *Imperatoria Ostruthium*, and marked "near the Patent slip, Cheshire, in 1830." Specimens of this plant, which I have gathered, have always emitted a most powerful, and to all persons who have botanized with me, a most disagreeable odour, perfectly offensive; yet in the British Flora it is termed "aromatic, but too strong and pungent to be agreeable."

ORDER XXXVIII. ARALIACEÆ. The Aralia Family.

ADOXA. *Linn.* Moschatell. *Octandria—Tetragynia.*

A. MOSCHATELLINA, *Linn.* Tuberous Moschatell. April,
May. 24

In woods and shady hedge bottoms, frequent.

Puccinia Adoxæ, and *Æcidium albescens*, are sometimes found on the leaves and stems of this plant. *Bart.*

HEDERA. *Linn.* Ivy. *Pentandria—Monogynia.*

H. HELIX, *Linn.* Common Ivy. October, November. 12

In hedges and about old buildings, very common.

There is a very fine specimen of ivy, of considerable age, covering one end of the old chapel which is part of the ancient Priory, at Birkenhead. The main stem is equal in thickness to the trunk of a young tree. *Sphæria Hederae* is parasitic upon the leaves of the ivy. Near Claughton Hall is a very old and decayed oak tree, covered with ivy, of very great antiquity, kindly pointed out to me by Mr. R. Adie.

ORDER XL. LORANTHACEÆ. The Mistletoe Family.

VISCUM. *Linn.* Mistletoe. *Dioecia—Tetrandria.*

V. ALBUM, *Linn.* Common Mistletoe. May. 12

At Otterspool, and at Sefton Park. *Dr. Dickinson.*

ORDER XLI. CAPRIFOLIACEÆ. The Honeysuckle Family.

SAMBUCUS. *Linn.* Elder. *Pentandria—Trigynia.*

S. EBULUS, *Linn.* Dwarf Elder, or Danewort. July. 24

In moist situations about Liverpool, and occasionally in Wirral. *H. Shepherd.* Near the Botanic Garden, and near the village of Oxtown. *A. Murray.*

S. NIGRA, Linn. Common Elder. June. ☉

Woods and hedges, common.

VIBURNUM, Linn. Guelder Rose. *Pentandria—Trigynia.*

V. OPULUS, Linn. Common Guelder Rose or Water Elder.
June, July.

In woods and hedges, frequent.

The Guelder-rose, or Snow-ball-tree, as it is sometimes called, is a common variety in gardens, in which nearly the whole of the umbel consists of neutral florets, contracted into a globular form.

LONICERA, Linn. Honeysuckle. *Centandria—Monogynia.*

L. PERICLYMENUM, Linn. Common Honeysuckle. June—
Oct. ♀

In woods, and hedges, frequent.

L. CAPRIFOLIUM, Linn. Pale Perfoliate Honeysuckle. June. ♀

In hedges at Aigburth, near the Toll-bar, abundant. *Dr. Dickinson.*

L. XYLOSTEUM, Linn. Upright Fly Honeysuckle. July. ♀

In hedges at Aigburth, along with the preceding, both introduced. *Dr. Dickinson.*

ORDER XLII. RUBIACEÆ. The Madder Family.

(The following genera belong to *Tetandria—Monogynia.*)

SHERARDIA, Linn. Sherardia or Field Madder.

S. ARVENSIS, Linn. Blue Sherardia. June—Aug. ☉

In fields, and waste ground, very common.

ASPERULA, Linn. Woodruff.

A. ODORATA, Linn. Sweet Woodruff. May, June. ♀

In woods, and shady places, frequent.

GALIUM, Linn. Bed-straw.

G. VERUM, Linn. Yellow Bed-straw. July, Aug. ♀

On the sand-hills, on the shores of the Mersey, very abundant.

G. CRUCIATUM, Linn. Crosswort Bed-straw. May, June. ♀

Near Formby. *Dr. Dickinson.* Hedge sides below River View, Seacombe. *Dr. Dickinson.* Near Eastham, and very abundant in hedges and dry banks about Sutton Hall.

G. ULIGINOSUM, Linn. Rough Marsh Bed-straw. Aug. 24

In wet marshy places, and by the sides of ponds and ditches, very common.

G. SAXATILE, Linn. Smooth Heath Bed-straw. June—
Aug. 24

Common in dry heathy situations. Toxteth Park. *Dr. Dickinson.* About Bootle. Abundant on Tranmere Heath, Bidston Heath, Oxtan Moor, &c.

G. APARINE, Linn. Goose-grass or Cleavers. June, July. ☉

In hedges, &c. very common.

Sphinx stellatarum, *S. euphorbia*, and *Elphenor*, feed upon the different species. *With.*

ORDER XLIII. VALERIANACEÆ. The Valerian Family.

FEDIA, Vahl. Corn Sallad. *Triandria—Monogynia.*

F. OLITORIA, Vahl. Common Corn Sallad. April—June. ☉

Abundant on the sand-hills on the shores of the Mersey, as well as on banks and borders of fields inland.

This plant is of an extremely diminutive habit on the sand-hills, and would scarcely be recognised by a young botanist.

F. DENTATA, Vahl. Smooth Narrow-fruited Corn-sallad. June, July. ☉

On hedge banks, and by the borders of fields, not so common as the preceding. Crosby. *J. S. in Herb.* Borders of fields, near Upper Tranmere.

VALERIANA, Linn. Valerian. *Triandria—Monogynia.*

V. DIOICA, Linn. Small Marsh Valerian. June, 24

Woolton; and very abundant in low meadows opposite Knowles, between the house and Woodside. *Dr. Dickinson.*

V. OFFICINALIS, Linn. Great Wild Valerian. June, July. 24

By the side of ponds, and in marshy places, frequent.

ORDER XLIV. DIPSACEÆ. The Scabious Family.

DIPSACUS, Linn. Teasel. *Tetandria—Monogynia.*

D. SYLVESTRIS, Linn. Wild Teasel. July. ♂

Abundant along the shore beyond the Dingle. *Dr. Dickinson.*
Very common about Bidston, Upton, &c., by roadsides, and
in meadows. Near Tranmere Wood.

The united leaves collect the rain, which supports the plant during
long drought, and in these reservoirs many insects are drowned ; so that
we may rank this plant among the vegetable *Musciapæ*.

(Mr. Andrew Stewart informs me that *D. pilosus* formerly grew on
the site of Abercromby Square ; and Mr. H. Shepherd says it also grew
on the site of the Necropolis.)

KNAUTIA, Linn. Knautia. *Tetrandria—Monogynia.***K. ARVENSIS, Coult.** Field Knautia. July. ♀

Near Aigburth. *Dr. Dickinson.* Crosby. *J. S. in Herb.*
Wirral. *H. C. Watson.*

SCABIOSA, Linn. Scabious. *Tetrandria—Monogynia.***S. SUCCISA, Linn.** Devil's-bit Scabious. July, August. ♀

Meadows, and shady places, very common.

ORDER XLV. COMPOSITÆ. The Composite Family.**SUB-ORDER. CYNAROIDEÆ.****SERRATULA, Linn.** Saw-wort. *Syngenesia—Æqualis.***S. TINCTORIA, Linn.** Common Saw-wort. August. ♀

Abundant in a moist wooded part of Otterspool, near the water.
H. Shepherd. Plentiful in Gilbrook.

CENTAUREA, Linn. Knapweed. *Syngenesia—Frustranea.***C. NIGRA, Linn.** Black Knapweed. June—August. ♀

In hedges, and shady places, and by way-sides, very frequent.

The leaves are very variable, being entire, or occasionally more or
less toothed.

Mr. Tudor formerly found *C. scabiosa* in the neighbourhood of Bootle,
but has not seen it of late years ; and, in 1837, I received a specimen
from Mr. H. Watson, marked, "Corn fields, Cheshire."

ARCTIUM, Linn. Burdock. *Syngenesia—Æqualis.***A. LAPPA, Linn.** Common Burdock. July, August. ♂

In waste ground, and by roadsides, very common.

VAR β . TOMENTOSA. A. Bardana, Willd. E. Bot.

In similar situations, equally common.

CARDUUS. Linn. Thistle. *Syngenesia*—*Æqualis*.

C. TENUIFLORUS, Curt. Slender-flowered Thistle. June, July. ☉

At Bootle, in waste ground, by the roadside, near the Toll-gate, and in other localities in the neighbourhood of the sea. In a field at the back of Leasowe Castle. Egremont. Dr. Dickinson.

CNICUS. Linn. Plume Thistle. *Syngenesia*—*Æqualis*.

C. PALUSTRIS, Willd. Marsh Plume Thistle. July. ♂

Common in moist shady places, and by the side of ditches, with white, and with purple flowers.

C. ARVENSIS, Hoffm. Creeping Plume Thistle. July. ♀

In fields, and by roadsides, very common.

C. LANCEOLATUS, Willd. Spear Plume Thistle. July, August. ♂

In waste places, and by roadsides, very common.

ONOPORDUM. Linn. Cotton Thistle. *Syngenesia*—*Æqualis*.

O. ACANTHIUM, Linn. Common Cotton Thistle. Aug. ♂

Hoylake. R. Tudor. Near Hoylake. Miss E. Potts. At Bootle, but an outcast from the garden of Mr. Tudor.

CARLINA. Linn. Carline Thistle. *Syngenesia*—*Æqualis*.

C. VULGARIS, Linn. Common Carline Thistle. June. ♂

Common on the sand-hills on the shores of the Mersey.

The flowers are terminal, solitary, of a singular aspect, and not inelegantly variegated; the radiating scales of the calyx are cream-coloured, polished, hygrometrical, changing their position according to the moisture of the atmosphere. Sm. The whole plant, after having perfected its seeds, turns white and shrivels; in which state it may be observed throughout the winter.

SUB-ORDER. CICHOREÆ.

(The following genera belong to *Syngenesia*—*Æqualis*.)

LAPSANA. Linn. Nipple-wort.

L. COMMUNIS, Linn. Common Nipple-wort. July, Aug. ☉

In waste ground, and by way-sides, very common.

CICHORIUM. *Linn.* Wild Succory.C. INTYBUS, *Linn.* Wild Succory. July, August. ♀

Near Otterspool. *H. Shepherd.* Little Sutton. *R. Slack.*
 Woodside, in a meadow, near Claughton Hall; but eaten down
 by cattle? *Hughes.*

HYPOCHÆRIS. *Linn.* Cat's-ear.H. RADICATA, *Linn.* Long-rooted Cat's-ear. July. ♀

In meadows and by way-sides, very common.

THRINCIA. *Roth.* Thrincia.T. HIRTA, *Roth.* Hairy Thrincia. July, August. ♀

In meadows, and by way-sides, very common.

In the specimens that I have of this plant, the leaves are slightly
 dentate, very hispid, and the scapes very numerous.

APARGIA. *Schreb.* Hawkbit.A. AUTUMNALIS, *Willd.* Autumnal Hawkbit. Aug. ♀

In meadows, and pastures, and by road-sides, very common.

The specimens that I have seen of this plant are very luxuriant, and
 vary from being quite smooth to pubescent.

I am not aware whether *Apargia hispida* is found in this neighbour-
 hood. "It is very nearly allied to *T. hirta*, but has runcinate leaves,
 the hairs of which are universally divided into a forked shape. In the
 centre, not at the sides of these leafy plots, arise, pretty perpendicularly,
 the flower-stalks, having each one blossom, and more strongly ciliated.
 The calyx is covered by strong hairs, scaly, and the scales like tiles on
 one another. The flowers are larger than those of *Thrincia*, and of a
 darker yellow; each floret has a bush of long yellow hair at the entrance
 of the tube, and the five teeth of the upper extremity have five brown
 glands on the lower surface. In other respects the lower surface of the
 florets is of the same colour as the upper. The pappus is ovate and
 pinnated."

TRAGOPOGON. *Linn.* Goat's-beard.T. PRATENSIS, *Linn.* Yellow Goat's-beard. June. ♂

On the sand-hills, on the shores of the Mersey, and occasionally
 in pastures inland, not common.

H. ECHIOIDES, *Gærtn.* Bristly Ox-tongue. June, July. ♀

South shore of Liverpool, and near Speak Hall. *J. S. in Herb.*
Walton. R. Tuder. On the road from Claughton to Upton,
 frequent. Edge of Bromborough Pool, near the river.

LEONTODON. *Linn.* Dandelion.

L. TARAXACUM, *Linn.* Common Dandelion. Summer. ♄

In pastures, by road-sides, and in waste places, very common.

VAR. ♂. PALUSTRE. *L. PALUSTRE, Smith.* Marsh Dandelion.

On the sand-hills, at New Brighton, in grassy places, common.

Near the round bathing house at Waterloo, Mr. Tudor finds a curious spotted variety, of *L. taraxacum* (similar to *Hieracium maculatum*,) which I do not find noticed in any of our Floras.

CREPIS, *Linn.* Hawk's-beard.

C. TECTORUM, *Linn.* Smooth Hawk's-beard. July. ☉

In meadows, and waste places, and by road-sides, very common.

SONCHUS. *Linn.* Sow Thistle.

S. ARVENSIS, *Linn.* Corn Sow Thistle. August. ♄

Borders of fields, and waste places, frequent.

S. OLERACEUS, *Linn.* Common Sow Thistle. June—Aug. ☉

In meadows, waste places, and by roadsides, very common.

The leaves are very variable in shape. Withering enumerates seven varieties. These will, I suppose, one day or other be manufactured into species.

HIERACIUM. *Linn.* Hawkweed.

H. PILOSELLA, *Linn.* Common Mouse-ear Hawkweed.

Very abundant on the sand-hills, and on dry banks, very common.

H. SYLVATICUM, *Sm.* Wood Hawkweed. August. ♄

Abundant on the sand-hills at New Brighton.

H. SABAUDUM, *Sm.* Shrubby Broad-leaved Hawkweed.
August, September. ♄

Very abundant in shady situations, and in hedges; occasionally on the sand-hills on the shores of the Mersey.

H. UMBELLATUM, *Linn.* Narrow-leaved Hawkweed. Aug.
September. ♄

Bootle Rabbit-warren, and on the sand-hills at Bootle. Very abundant on the sand-hills at New Brighton.

The stem of this plant is usually attacked near the centre by insects,

which cause an oval swelling of considerable size. Though *H. umbellatum*, *sabaudum*, and *sylvaticum*, are often growing close to each other on the sand-hills at New Brighton, still it is in all cases the former species only that is attacked. The swollen stems, quite dried and withered, with the cavities made by the insects, may be noticed remaining late in the year.

SUB-ORDER. EUPATORIÆ.

EUPATORIUM. *Linn.* Hemp Agrimony. *Syngenesia*—*Æqualis*.

E.CANNABINUM, *Linn.* Common Hemp Agrimony. July, August. 2

In marshy places, and by the side of ponds, frequent.

TUSSILAGO. *Linn.* Colt's-foot. *Syngenesia*—*Superflua*.

T. FARFARA, *Linn.* Colt's-foot. March, April. 2

In pastures, and by road-sides, and in waste places, very common.

Æcidium Tussilaginis is common on the under surface of the leaves of this as well as the following.

PETASITES. *Desf.* Butter-bur. *Syngenesia*—*Superflua*.

P. VULGARIS, *Desf.* Common Butter-bur. April, May. 2

West Derby. *Dr. Dickinson.* On the right hand side of the road leading from Bidston village to Leasowe, about one hundred yards beyond the public house. Bidston Marsh, near Wallasey Church. *J. Norton.*

SUB-ORDER. ASTEROIDEÆ.

(The following Genera belong to *Syngenesia*—*Superflua*.)

SOLIDAGO. *Linn.* Golden-rod.

S. VIRGAUREA, *Linn.* Common Golden-rod. July—Sept. 2

On heaths, and in shady places, frequent.

I have specimens from Bidston Stone-quarry, and from Tranmere wood, which differ very much in their habit. At the quarry it has more numerous woody stems, each bearing a leafy panicle, and the radical leaves are more numerous. It is very abundant on Tranmere Heath, with a similar habit.

ASTER. *Linn.* Starwort.

A. TRIPOLIUM, *Linn.* Sea Starwort. August, Sept. 2

Shores of the Mersey, very common. Shore below Toxteth Park. *H. C. Watson*. Garston. *J. S. in Herb.* Bootle. *R. Tudor*. Wallasey, Bromborough Pool, &c.

ERIGERON. *Linn.* Flea-bane.

E. ACRIS, *Linn.* Blue Flea-bane. August. ♀

Sandhills at Bootle and New Brighton, plentiful, and occasionally inland, but not common.

E. canadensis may be found naturalized on the site of the Old Botanic Garden at Crown Street.

BELLIS. *Linn.* Daisy.

B. PERENNIS, *Linn.* Common Daisy. Spring—Autumn. ♀

In pastures, and by roadsides, very common.

“ On waste and woodland, rock and plain,
Its humble buds unheeded rise,
The rose has but a summer's reign,
The *Daisy* never dies.”—*Montgom.*

PULICARIA. *Gærtn.* Flea-bane.

P. DYSENTERICA, *Cass.* Common Flea-bane. Aug. ♀

In marshy places, and by the side of ditches, very common.

SUB-ORDER. SENECTIONIDEÆ.

BIDENS. *Linn.* Bur-Marigold. *Syngenesia*—*Æqualis*.

B. CERNUA, *Linn.* Nodding Bur-Marigold. June—Aug. ☉

By the side of ponds, and in marshy places, frequent.

B. TRIPARTITA, *Linn.* Trifid Bur-Marigold. July. ☉

In similar situations to the preceding, frequent.

ACHILLÆA. *Linn.* Yarrow. *Syngenesia*—*Superflua*.

A. PTARMICA, *Linn.* Sneezewort Yarrow. July, Aug. ♀

In pastures, and by way-sides, frequent.

A. MILLEFOLIUM, *Linn.* Common Yarrow. Summer. ♀

In pastures, and by way-sides, and in waste ground, very common.

CHRYSANTHEMUM. *Linn.* Ox-eye. *Syngenesia*—*Superflua*.

C. LEUCANTHEMUM, Linn. Great White Ox-eye. June, July. 24

In fields, pastures, and by way-sides, very common.

C. SEGETUM, Linn. Corn Marigold. June—August. ☉

In cultivated fields, and waste ground, frequent.

MATRICARIA, Linn. Wild Chamomile. *Syngenesia—Superflua.*

M. CHAMOMILLA, Linn. Wild Chamomile. Aug. ☉

In fields, and waste places by roadsides, frequent.

PYRETHRUM, Hall. Feverfew. *Syngenesia—Superflua.*

P. INODORUM, Sm. Corn Feverfew. Aug.—Oct. ☉

About Liverpool. Dr. Dickinson. Common in Wirral. H. C. Watson.

P. MARITIMUM, Sm. Sea-side Feverfew. July. 24

Coast of the Mersey, above Liverpool. Sir J. E. Smith, in *Eng. Fl. and in Herb.* Occasionally in Wirral, in the neighbourhood of the sea.

Considered only as a variety of *P. inodorum*, the succulent herbage being occasioned by its situation.

Mr. H. Shepherd informs me that *P. Parthenium* is occasionally found in the neighbourhood of Liverpool, but generally under suspicious circumstances.

ARTEMISIA, Linn. Wormwood. *Syngenesia—Superflua.*

A. MARITIMA, Linn. Sea Wormwood. September. 24

Muddy inlets of the Mersey, common. Garston. J. S. in *Herb.* Wallasey and Bromborough Pool.

A. VULGARIS, Linn. Mugwort. August. 24

Borders of fields, ditch banks, and on rubbish, very common.

A. ABSINTHIUM, Linn. Common Wormwood. Aug. 24

Bidston village, on some rubbish, sparingly, in 1837. Poulton, near the Poulton Hotel. Dr. Dickinson.

TANACETUM, Linn. Tansy. *Syngenesia—Superflua.*

T. VULGARE, Linn. Common Tansey. August. 24

On hedge-banks frequent, but generally in the neighbourhood of houses or gardens.

GNAPHALIUM, *Linn.* Cudweed. *Syngenesia*—*Superflua*.

G. ULIGNOSUM, *Linn.* Marsh Cudweed. August, Sept. ☉

Very common in wet places, and by roadsides, where water has remained during winter.

G. MINIMUM, *Sm.* Least Cudweed. July, August. ☉

In heathy and barren places, frequent. Allerton. *J. S. in Herb. Toxteth Park. Dr. Dickinson.* Very plentiful about Bidston village, Oxton Moor, &c.

G. GERMANICUM, *Huds.* Common Cudweed. June, July. ☉

Allerton. *J. S. in Herb.* About Oxton Moor and Bidston Heath, but not common.

On the site of the old Botanic Garden at Crown-street, *G. luteo-album* grows in plenty, being formerly cultivated in the garden.

SENECIO. *Linn.* Groundsel. *Syngenesia*—*Superflua*.

S. VULGARIS, *Linn.* Common Groundsel. Summer. ☉

Waste grounds, and in fields and by roadsides, very common.

S. SYLVATICUS, *Linn.* Mountain Groundsel. July. ☉

In dry, barren and heathy situations common.

S. TENUIFOLIUS, *Jacq.* Hoary Ragwort. July, Aug. ♀

In woods and hedges and by road sides, very common.

I have observed that this plant makes its appearance in flower later than the following species, and does not last in flower so long; it is taller and grows more upright, and is not so much branched. The panicle is not so crowded, and the stem is more or less covered with cottony pubescence.

S. JACOBÆA, *Linn.* Common Ragwort. July, Aug. ♀

In similar situations with the preceding, very common.

This plant grows in the greatest profusion on the sand-hills on the shores of the Mersey, where it seems to defy the most parching summers; it is devoured by the larvæ of *Callimorpha Jacobæa*; the perfect moth is so plentiful as to have long attracted the attention of the most incurious.

S. AQUATICUS, *Huds.* Marsh Ragwort. July, Aug. ♀

In wet places, and by the sides of ponds and in ditches, very common.

In Withering, *S. Saracenicus* is said to grow on the banks of the river

Dee, above Eaton Boat, on the authority of Mr. Griffiths; but in the New Botanist's Guide the same locality, apparently ("by the eastern side of the Dee, just above Eton Boat, sparingly; Waring"), is placed against *S. paludosus*, and *S. Saracenicus* is stated to grow near Chester, from the English Flora.

ORDER XLVI. CAMPANULACEÆ. The Campanula Family.

JASIONE. *Linn.* Sheep's-bit. *Pentandria—Monogynia.*

J. MONTANA, *Linn.* Annual Sheep's-bit. June, July. ☉

On the sandhills on the shore of the Mersey, as well as in dry, barren situations inland, very common.

White varieties of this plant occur occasionally on the sandhills, which are very elegant.

CAMPANULA. *Linn.* Bell-flower. *Pentandria—Monogynia.*

C. ROTUNDIFOLIA. *Linn.* Round-leaved Bell-flower. July, Sept. ♀

On the sandhills on the Mersey, as well as inland, in dry situations, very common.

This is, no doubt, the plant intended by the poet in the following lines:—

"E'en the light *Hare-bell* raised its head,
Elastic, from her airy tread;"

and not the *Hyacinthus non scriptus*, as Baxter states, in his Flowering Plants. It appears that Baxter has followed the opinion of Dr. Johnson, in his "Flora of Berwick upon Tweed;" but I think that Dr. Withering has clearly shown that these two plants pass under different names in England and Scotland; and Sir W. J. Hooker has, I am glad to see, adopted, in his British Flora, the opinion of Dr. Withering. It may occasionally be found with white flowers.

Mr. Shepherd informs me that he once found *C. latifolia* at Woodside, by the side of a narrow inlet of salt water; and Mr. Andrew Stewart also found it some years since by the side of a stream of water which runs from Green bank, about one or two fields off.

ORDER XLVII. ERICACEÆ. The Heath Family.

SUB-ORDER. ERICEÆ.

ERICA. *Linn.* Heath. *Octandria—Monogynia.*

E. TETRALIX, *Linn.* Cross-leaved Heath. July, Aug. ♀

On heaths and mossy ground, frequent. With white blossom occasionally on Oxton Moor, a very elegant variety.

E. CINEREA, Linn. Fine-leaved Heath. July, Aug. 2
On heathy and moory ground, common.

CALLUNA, Salisb. Ling. *Octandria—Monogynia.*

C. VULGARIS, Salisb. Common Ling. June—Aug. 1
On heathy and moory ground, very common.

SUB-ORDER. VACCINIEÆ.

VACCINIUM, Lin. Whortleberry. *Octandria—Monogynia.*

V. MYRTILLUS, Linn. Bilberry or Whortleberry. May. 1
In moory situations, occasionally. Woolton Hill. II. Shepherd.
Very abundant on the side of Bidston stone-quarry.

V. VITIS IDÆA, Linn. Red Whortleberry. May, June. 2
Side of Bidston stone-quarry, plentiful.

This species, being an evergreen, is easily found in winter; but when the former species is in leaf, it almost entirely hides the other from view, and, though it may be in flower, it is with some difficulty that it can be found.

SUB-CLASS III. COROLLIFLORÆ.

ORDER XLVIII. ILLICENACEÆ. The Holly Family.

ILEX, Linn. Holly. *Tetrandria—Tetragynia.*

I. AQUIFOLIUM, Linn. Common Holly. May, June. 1
In hedges and woods, very frequent.

ORDER XLIX. JASMINACEÆ. The Privet Family.

LIGUSTRUM, Linn. Privet. *Diandria—Monogynia.*

L. VULGARE, Linn. Privet. June, July. 1

In hedges, and plantations, occasionally.

ORDER L. APOCYNACEÆ. The Apocynum Family.

VINCA, Linn. Periwinkle. *Pentrandia—Monogynia.*

V. MINOR, Linn. Lesser Periwinkle. May, June. 2

Toxteth Park, near Liverpool, and in profusion at the Nut woods, near Hale. Dr. Bostock, in With.

Dr. Dickinson has noticed it in the former locality tolerably abundant, opposite Fulwood Lodge, but under suspicious circumstances. I should also doubt its being truly wild at the Nut woods.

ORDER LI. GENTIANACEÆ. The Gentian Family.

MENYANTHES. *Linn.* Buckbean. *Pentandria—Monogynia.*

M. TRIFOLIATA, *Linn.* Common Buckbean. June, July. 2

Litherland. *R. Tudor.* Very abundant in pits in Wirral.

This is one of the most beautiful of our native plants, and is highly deserving of the eulogium of the poet:—

“ Oft where the stream meandering glides,
Our beauteous *Menyanthes* hides
Her clustering, fringed flowers;
Nor, 'mid the gardens sheltering care,
Or famed exotics, rich and rare,
Purple or roseate, brown or fair,
A plant more lovely towers.”

In the opinion of Mr. W. Curtis it is equal to the *Kalmias*, the *Rhododendrons*, and the *Ericas* of foreign climes, “ which are purchased at an extravagant price, and kept up with much pain and expense, while this delicate native, which might be procured without any expense, and cultivated without any trouble, blossoms unseen, and wastes its beauty in the desert air.” To such as wish to have this plant flower with them in perfection, Mr. Curtis recommends the following mode of cultivation. “ Collect the roots of the plant either in spring or autumn, put them in a large pot, (having a hole at the bottom,) filled with bog earth; immerse the pot about two thirds of its depth in water, in which it should continue; the advantage of this method is, that when the plant is coming into flower, it may be brought into any room, and placed in a pan of water, where it will continue to blossom for two or three weeks.” A single root, which Mr. Curtis treated in this manner, planted in the spring, produced, the ensuing May, eight flowering stems, many of which had fifteen or sixteen blossoms on them. *Bart. Flowering Plants.* The poor gather it in this neighbourhood in large quantities, and use a decoction of it for medicinal purposes. Howitt justly compares this elegant flower to a “ fringed hyacinth.”

CHLORA. *Linn.* Yellow-wort. *Octandria—Monogynia.*

C. PERFOLIATA, *Linn.* Perfoliate Yellow-wort. July,
Sept. ☉

Knot's-hole Rocks. *Dr. Bostock, in With.* Common about Bootle. *R. Tudor.* Frequent about Woodside. Occurs also on the sand-hills, on the shores of the Mersey.

GENTIANA. *Linn.* Gentian. *Pentandria—Digynia.*

G. PNEUMONANTHE, Linn. Marsh Gentian. Aug. Sept. ♀

Near Bootle, and on Childwall Common. *Dr. Bostock, in With. Orrell. R. Tudor.* Abundant on Oxtan Moor, Bidston Heath, &c. Heswall Hills. *Miss E. Potts.* Not uncommon about Parkgate. *New Bot. Guide.*

I am informed it formerly grew on Tranmere Heath, but is not found there now; a school which is established there, though it extends the progress of education, has not, I am sorry to say, the same effect on the vegetation. On the Moors in this neighbourhood, I usually find it with one terminal flower, as represented in English Botany, which is by far the most elegant state of the plant; but from some cultivated ground in the neighbourhood of Oxtan Moor, I have very luxuriant specimens, with several axillary flowers, as represented in the *Flora Danica*. The leaves are drawn much more acute in *Fl. Dan.* than in the English Botany.

G. AMARELLA, Linn. Autumnal Gentian. April, June. ☉

Seaforth Common, very abundant. Heswall Hills. *Miss E. Potts.*

This elegant little plant may be distinguished from the following, by having all the segments of the calyx acute. The time of flowering for this species in the British Flora is evidently incorrect, as Mr. Tudor informs me that it is later in coming into flower than the *campestris*, usually blossoming about September.

G. CAMPESTRIS, Linn. Field Gentian. Aug—Oct. ☉

Seaforth Common along with the preceding species. Common about Allerton Hall. *Dr. Bostock in With.* Very abundant in grassy spots on the Cheshire coast, from New Brighton to Hoylake. Heswall Hills. *Miss E. Potts.*

I have specimens which have grown within the influence of the sea air, scarcely an inch high. Col. Velley remarks, that as this so nearly resembles the *Amarella*, the segments of the calyx afford a very pleasing distinction, the two interior of this species being lanceolate, and the two outer, ovate.

ERYTHREA, Renealm. Centaury. *Pentandria—Monogynia.***E. CENTAURIUM, Pers.** Common Centaury. July, Aug. ☉

In barren fields, and by way-sides, very common. On the sand-hills, occasionally with white flowers.

E. PULCHELLA, Hook. Dwarf Branched Centaury. Aug. Sept. ☉

Seaforth Common, and in grassy spots among the sand-hills, between Bootle and Crosby, not uncommon.

E. LITTORALIS, Hook. Dwarf-tufted Centaury. June, July. ☉

Seaforth Common, and grassy spots among the sand-hills between Bootle and Crosby, not uncommon.

This appears more questionable as a species than either the last or the following one.

E. LATIFOLIA, Sm. Broad-leaved-tufted Centaury. July. ☉

Seaforth Common, and in grassy spots among the sandhills beyond Bootle, rare.

Mr. Tudor observes, that these three last species, or varieties, as considered by some able botanists, do not blossom till after *E. centaurium* has gone out of flower.

ORDER LIII. CONVULVULACEÆ. The Convolvulus Family.

CONVOLVULUS, Linn. Bindweed. *Pentandria—Monogynia.***C. ARVENSIS, Linn.** Small Bindweed. June, July. ♀

In corn fields and pastures, common.

C. SEPIUM, Linn. Great Bindweed. July, August. ♀

In hedges, not common. In a lane at Everton, leading to the Zoological Gardens. Aigburth and Garston. *Dr. Dickinson.* Bootle. *R. Tudor.* A weed in Hamilton Square Garden. In a hedge by the side of a field between Upton and Greasby. Near the half-way house between Egremont and New Brighton. *Dr. Dickinson.*

There is a variety from near Speak Hall, in the Herbarium at the Botanic Gardens, in which the leaves are somewhat heart-shaped, and the flowers smaller.

C. SOLDANELLA, Linn. Sea-side Bindweed. June—Aug. ♀

At Bank Hall, near Liverpool, and Garston. *With.* Sparingly at Bootle.

ORDER LIV. BORAGINACEÆ. The Borage Family.

(The following genera belong to *Pentandria—Monogynia.*)

ECHIU. Linn. Viper's Bugloss.**E. VULGARE, Linn.** Common Viper's Bugloss. June, July. ♂

Sand hills, Little Crosby.

LITHOSPERMUM. Linn. Gromwell.

L. OFFICINALE, Linn. Common Gromwell. June. 2
Plentiful amongst gorze in a field between New Brighton and Wallasey.

L. ARVENSE, Linn. Corn Gromwell. May, June. ☉
Allerton. *J. S. in Herb.* In cultivated fields about Aigburth.
A. Murray.

SYMPHYTUM. Linn. Comfrey.

S. OFFICINALIS, Linn. Common Comfrey. May, June. 2
West Derby. *Dr. Dickinson.* Bootle. *R. Tudor.* With red flowers, near Crosby; and with purple ones, near Liverpool.
In Herb. Near Wallasey Church. *T. Glover.*

LYCOPSIS. Linn. Bugloss.

L. ARVENSIS, Linn. Small Bugloss. June, July. ☉
Very common on the sandhills on the shores of the Mersey, and occasionally on waste ground inland.

There are specimens in the Herbarium at the Botanic Gardens from Wilmslow, Cheshire, of a more upright habit, with leaves much more lanceolate, and more distinctly toothed than in the specimens we have on the sea coast.

ANCHUSA. Linn. Alkanet.

A. SEMPERVIRENS, Linn. Evergreen Alkanet. May, June. 2
Abundant in a field at Toxteth Park, behind Parkfield, the residence of Mr. Charles Tayleure. *Dr. Dickinson.*

MYOSOTIS. Linn. Scorpion-grass.

M. PALUSTRIS, Kiphoff. Great Water Scorpion-grass.
Summer. 2
In ditches, and by the side of ponds, and in wet places, very common.

M. ARVENSIS, Hoffm. Field Scorpion-grass. June, Aug. ☉
In cultivated fields, and waste ground, common.

M. COLLINA, Hoffm. Early Field Scorpion-grass. April, May. ☉

Frequent on the sand-hills, on the shores of the Mersey; as well as frequent on dry hedge banks about Bidston, Tranmere, Woodside, &c.

I noticed this plant as abundant in the spring of 1838, but could find no specimens exceeding one inch in height, scarcely reaching above the grass on dry hedge banks.

M. VERSICOLOR, *Lehm.* Yellow and Blue Scorpion-grass.
April, June. ☉

In meadows, and on banks, &c., common.

CYNOGLOSSUM, *Linn.* Hound's-tongue.

C. OFFICINALE, *Linn.* Common Hound's-tongue. June,
July. ♂

Very common on the sand-hills on the shores of the Mersey.

ORDER LV. SOLANACEÆ. The Solanum Family.

(The following Genera belong to *Pentandria—Monogynia.*)

SOLANUM, *Linn.* Nightshade.

S. DULCAMARA, *Linn.* Woody Nightshade. June, July. ♀

Liverpool; and Bootle. *H. W. in New Bot. Guide.* Frequent
in hedges and shady places about Woodside.

S. NIGRUM, *Linn.* Common or Garden Nightshade. June—
September. ☉

In waste and cultivated ground, frequent.

HYOSCYAMUS, *Linn.* Henbane.

H. NIGER, *Linn.* Common Henbane. July. ☉

Plentiful in one spot among the sand-hills at Crosby.*
Formby. *R. Tudor.* At the back of the sand-hills at New
Brighton. *A. Higginson.*

I have occasionally seen the radical leaves in the neighbourhood of
Liverpool and at Woodside, but do not quote the stations, as they are
not so truly wild as on the sea coast.

VERBASCUM, *Linn.* Mullein.

V. THAPSUS, *Linn.* Great Mullein. July, August. ♂

In hedges and waste ground, occasionally.

ORDER LVI. OROBANCHACEÆ. The Broom-rape
Family.

OROBANCHE, *Linn.* Broom-rape. *Didynamia—Angios-
permia.*

* First seen in this locality by Mr. Tudor, in the summer of 1838,
but there are specimens in the Herbarium at the Botanic Gardens,
marked J. S. 1801, from the same locality.

- O. MAJOR, Linn.** Greater Broom-rape. June, July. ♀
 Among gorze bushes at Allerton. *Mr. R. Roscoe, in With. and H. Shepherd.* Lancashire. *Sir J. E. Smith, in Herb.*

ORDER LVII. SCROPHULARACEÆ. The Figwort Family.

(The following Genera, except *Veronica*, belong to *Didynamia*—*Angiospermia*.)

DIGITALIS. Linn. Foxglove.

- D. PURPUREA, Linn.** Purple Foxglove. June, July. ♂
 In dry, heathy, and shady situations, frequent.

LINARIA. Juss. Toadflax.

- L. VULGARIS, Mænoch.** Yellow Toadflax. August. ♀
 In hedge banks and on waste ground, frequent.

There are specimens of the curious variety *peloria* in the Herbarium at the Botanic Gardens, gathered in 1830, a few miles from Northwich, by the Rev. Mr. Atkins.

Linaria Elatine is naturalized with a variety of other plants at Crown Street, on the old site of the Botanic Gardens.

SCROPHULARIA. Linn. Figwort.

- S. NODOSA, Linn.** Knotted Figwort. July. ♀
 On hedge banks, and in shady moist situations, common.

- S. AQUATICA, Linn.** Water Figwort. July. ♀
 In more moist situations than the foregoing, frequent. *H. Shepherd.*

LILOSELLA. Linn. Mudwort.

- L. AQUATICA, Linn.** Common Mudwort. July, Aug. ☉
 Near Garston. *R. Roscoe, in Herb.*

MELAMPYRUM. Linn. Cow-wheat.

- M. PRATENSE, Linn.** Common Yellow Cow-wheat. Aug. ☉
 In woods and shady places, common.

Mr. Wilson Armistead informs me that he has noticed a white variety growing promiscuously with the yellow, in Gilbrook, and that sometimes an intermediate variety may be met with, having two yellow marks on the lower lip of the corolla.

There are specimens in the Herbarium at the Botanic Gardens, marked *M. sylvaticum*? from Cheshire, which are doubtless *M. pratense*.

PEDICULARIS. *Linn.* Louse-wort.

P. SYLVATICA, *Linn.* Pasture Louse-wort. July. ♀

In pastures, and on heathy ground, common.

Mr. Wilson Armistead has noticed a white-flowered variety in Gilbrook, with leaves of a lighter green, and destitute of the usual red tinge which they have.

P. PALUSTRIS, *Linn.* Marsh Louse-wort. June, July. ♀

In marshy places, and wet pastures, frequent.

RHINANTHUS. *Linn.* Yellow-rattle.

R. CRISTA-GALLI, *Linn.* Common Yellow-rattle. June. ☉

In meadows and pastures, so abundant as to lead to the supposition that it has been sown.

BARTSIA. *Linn.* Bartsia.

B. VISCOSA, *Linn.* Yellow Viscid Bartsia. Aug. ☉

Allerton. *R. Roscoe.* Crosby. *Dr. Bostock,* in *With.* Bootle. *R. Tudor.* Near Little Crosby; in great plenty near Hoylake. *J. S. in Herb.* Abundant in fields about Hoylake. *Miss E. Potts.* In several localities among the sand-hills between New Brighton and Hoylake. It has also been found at Ormskirk, Speak Hall, Ditton, Southport, and on Bartington Heath, Cheshire.

B. ODONTITES, *Huds.* Red Bartsia. July, Aug. ☉

In dry barren pastures, and by way-sides, very common. With white flowers occasionally.

EUPHRASIA. *Linn.* Eye-bright.

E. OFFICINALIS, *Linn.* Common Eye-bright. July. ☉

In pastures, and in dry barren places, very common.

In the Herbarium at the Botanic Gardens are specimens of a beautiful variety of this plant, with a very large corolla, gathered by the late Col. Velley, "on one of the loftiest mountains near Ambleside," and Mr. T. Glover of Manchester has given me specimens of the same variety, gathered somewhere near Keswick, where it occurred in great abundance.

VERONICA. *Linn.* Speedwell. *Diandria—Monogynia.*

V. SERPYLLIFOLIA, *Linn.* Thyme-leaved Speedwell. May—July. ♀

In dry barren pastures and fields, very common.

V. SCUTELLATA, *Linn.* Marsh Speedwell. July, Aug. ♀

In ponds, but not common. S. end of Wavertree, and about Bootle Land-mark. *J. S. in With.* Sparingly in a pond behind

Cleveland Cottage, North Birkenhead. New Brighton. A. Higginson. Little Sutton. R. Slack.

V. ANAGALLIS, Linn. Water Speedwell. July, Aug. 24

In ditches, and wet marshy places, frequent.

V. BECCABUNGA, Linn. Brooklime. Summer. 24

In ditches, and wet places, very common.

V. OFFICINALIS, Linn. Common Speedwell. May—July. 24

In dry barren pastures and fields, and by way-sides, very common.

In dry barren situations this plant is not much larger than *V. serpyllifolia*, but, in the Herbarium at the Botanic Gardens, some of Col. Velley's specimens are nearly as large as *Chamædrys* or *Montana*.

V. MONTANA, Linn. Mountain Speedwell. May, June. 24

In moist woods, and shady places, frequent.

The trivial name ill accords with the usual situation of this plant. Col. Velley remarks that Jacquin's figure of this plant is the best, but that Columna's is admirable, when it is considered that the figure is among the first engravings on copper.

V. CHAMÆDRYS, Linn. Germander Speedwell. May, June. 24

On hedge banks, and in shady places, common.

This elegant little flower, which only expands in fine weather ("the celestial bird's-eye blossom," as Phillips happily designates it,) has sometimes been mistaken for the real "Forget me not," (*Myosotis palustris*), and certainly rivals, in pleasing delicacy of form and colour, that symbol of fidelity.

V. HEDERIFOLIA, Linn. Ivy-leaved Speedwell. April—June. ☉

On hedge banks, common.

V. AGRESTIS, Linn. Green Procumbent Field Speedwell. April—Sept. ☉

In fields, and waste places, common.

V. ARVENSIS, Linn. Wall Speedwell. Spring—Summer. ☉

Walls, and hedge banks, common.

ORDER LVIII. LABIATÆ, or LAMIACEÆ. The Labiate Family.

(The following Genera belong to *Didynamia*—*Gymnospermia*, except *Lycopus*.)

MENTHA. *Linn.* Mint.

M. PIPERITA, *Sm.* Pepper Mint. August, Sept. 24

Near the Swan, by Liverpool. *J. S. in Herb.* In rivulets, (in Cheshire.) *B. G.*

M. HIRSUTA, *Linn.* Hairy Mint. August, Sept. 24

In marshy places, and by the side of ditches, very common.

M. ARVENSIS, *Linn.* Corn Mint. August, Sept. 24

In corn fields, frequent.

M. RUBRA, *Sm.* Tall Red Mint. September. 24

Plentiful in Eastham Wood; and in a cornfield at Oxtou (with *M. arvensis*.)

LYCOPUS. *Linn.* Gipsy-wort. *Diandria—Monogynia.*

L. EUROPÆUS, *Linn.* Common Gipsy-wort. June, July. 24

By the side of ponds and ditches, frequent.

ORIGANUM. *Linn.* Marjoram.

O. VULGARE, *Linn.* Common Marjoram. July, Aug. 24

Between Seacombe and Poulton. *A. Stewart, sp.* (Also found there by Mr. H. Shepherd.)

THYMUS. *Linn.* Thyme.

T. SERPYLLUM, *Linn.* Wild Thyme. July, August. 24

Very common on the sand-hills on the shores of the Mersey.

The cottony galls observable on this plant are attributable to a species of *Tephritis*, and occasion the woolly appearance, "*capitulis tomentos*," *Linn.*; and to which, from the same cause, several other plants are liable. *With.* I have observed *Veronica Chamædry*s on the sand-hills, attacked in the same manner along with this plant, and there are diseased specimens of *Thymus Serpyllum* in the Herbarium at the Botanic Gardens marked "variety."

Mr. H. Shepherd informs me that he has found *Acinos vulgaris* on Gill Moss, near Knowsley.

CALAMINTHA. *Mæench.* Calamint.

C. OFFICINALIS, *Mæench.* Common Calamint. July, Aug. 24

Near Garston. *H. Shepherd.* Cheshire. *H. S. in Herb.* In a lane leading from Claughton Hall to Bidston, very near Knowles' House.

CLINOPODIUM. *Linn.* Wild Basil.C. VULGARE, *Linn.* Wild Basil. August. 2

In shady lanes, and by hedge sides, occasionally.

PRUNELLA. *Linn.* Self-heal.P. VULGARIS, *Linn.* Self-heal. July, August. 2

In waste places, and by road-sides, very common. With white flowers, near Bootle, and near Rock Ferry.

SCUTELLARIA. *Linn.* Skull-cap.S. GALERICULATA, *Linn.* Common Skull-cap. July, Aug. 2

In marshy places, and by the side of ponds, occasionally.

S. MINOR, *Linn.* Lesser Skull-cap. July, Aug. 2Formby. *T. Glover, sp.* Cheshire. *J. Bowman, MS. in New Bot. Guide.*GLECHOMA. *Linn.* Ground-Ivy.G. HEDERACEA, *Linn.* Ground-Ivy. April, May. 2

In hedges, and shady places, very common.

There are specimens in the Herbarium of the Botanic Gardens, of a curious cultivated variety with variegated leaves.

LAMIUM. *Linn.* Dead-nettle.L. ALBUM, *Linn.* White Dead-nettle. June, July. 2Near Walton Church. *R. Tudor.* Fulwood Lodge, Toxteth Park, and near Aigburth. *Dr. Dickinson.* Common about Eastham. *H. Shepherd.*L. PURPUREUM, *Linn.* Red Dead-nettle. May—Sept. ☉

In hedges, and by road-sides, very common.

L. INCISUM, *Willd.* Cut-leaved Dead-nettle. May, June. ☉

Cultivated, and waste ground, frequent.

L. AMPLEXICAULE, *Linn.* Henbit-nettle. March, June. ☉

In similar situations to the preceding, frequent.

Lamium maculatum is found apparently wild in Gilbrook, the leaves sometimes variegated with white spots, and sometimes with white lines.GALEOPSIS, *Linn.* Hemp-nettle.

G. LADANUM, Linn. Red Hemp-nettle. Sept. Oct. ☉
Dry banks, Cheshire. *H. Shepherd.*

G. TETRAHIT, Linn. Common Hemp-nettle. Aug. ☉
In cultivated fields, and waste ground, common.

G. VERSICOLOR, Curt. Large-flowered Hemp-nettle. July, Aug. ☉
In cornfields between Woodside and Parkgate. Common in cornfields about Sutton Hall.

BETONICA. Linn. Betony.

B. OFFICINALIS, Linn. Wood Betony. July, Aug. ♀
In woods and shady places, frequent.

STACHYS. Linn. Woundwort.

S. SYLVATICA, Linn. Hedge Woundwort. July, Aug. ♀
In hedges, and shady places, very common.

S. PALUSTRIS, Linn. Marsh Woundwort. Aug. ♀
In marshy places, and by the side of ponds and ditches, very common.

S. ARVENSIS, Linn. Corn Woundwort. July, Aug. ☉
In sandy lanes, and waste and cultivated ground, frequent.

MARRUBIUM. Linn. White Horehound.

M. VULGARE, Linn. White Horehound. Aug. ♀
Near Bootle. *R. Tudor.*

BALLOTA. Linn. Horehound.

B. NIGRA, Linn. Black Horehound. July, August. ♀
In hedges, and by roadsides, and in waste ground, very common.

TEUCRIUM. Linn. Germander.

T. SCORODONIA, Linn. Wood Germander, or Sage. July, Aug. ♀
In dry heathy and shady places, very common.

AJUGA. Linn. Bugle.

A. REPTANS, Linn. Common Bugle. May, June. ♀
In woods, and by hedge sides, very common.

ORDER LIX. VERBENACEÆ. The Verbena Family.

VERBENA. *Linn.* Vervain. *Didynamia*—*Angiospermia*.V. OFFICINALIS, *Linn.* Common Vervain. July. 2

About Woodside, occasionally but not common. Plentiful near Sutton Hall. Hoyle. *J. S. in Herb.*

ORDER LX. LENTIBULACEÆ. The Butterwort Family.

UTRICULARIA. *Linn.* Bladderwort. *Diandria*—*Monogynia*.U. VULGARIS, *Linn.* Greater Bladderwort. June, July. 2

In ponds about Woodside and Bootle, not unfrequent. In the canal betwixt Crosby and Litherland. *H. Shepherd.*

U. MINOR, *Linn.* Lesser Bladderwort. June, July. 2

Sparingly near Bootle and Little Crosby. *Dr. Bostock, in With.*
In the canal betwixt Crosby and Litherland. *H. Shepherd.*
In the canal, and in a rill by the side of it, near Seaforth. *A. Murray.*

There are specimens in the Herbarium at the Liverpool Botanic Gardens of *Pinguicula vulgaris* from Crosby Marsh, in 1801, but it must be considered as doubtful whether it is now to be found there, a great part of the Marsh having been drained and cultivated.

ORDER LXI. PRIMULACEÆ. The Primrose Family.

(The following Genera belong to *Pentandria*—*Monogynia*.)HOTTONIA. *Linn.* Water Violet.H. PALUSTRIS, *Linn.* Common Water Violet. June. 2

About Bootle and Formby. *Dr. Bostock, in With.* In ditches between Litherland and Crosby. Sefton Meadows. *Dr. Dickinson.* Near Bebbington. *Dr. Dickinson.*

LYSIMACHIA. *Linn.* Loosestrife.L. VULGARIS, *Linn.* Great Yellow Loosestrife. July. 2

In ponds about Bootle, not common. Near Crosby. *Dr. Bostock, in With.* Between Crosby and Formby, not uncommon. *Dr. Dickinson.*

L. NEMORUM, *Linn.* Wood Loosestrife. Summer. 2

In woods, and shady places, frequent.

L. NUMMULARIA, Linn. Creeping Loosestrife. June, July. 2
 In a boggy part of Mr. Lightbody's grounds, near Garston. *H. Shepherd.*

ANAGALLIS. Linn. Pimpernel.

A. ARVENSIS, Linn. Scarlet Pimpernel. June, July. ☉
 In waste and cultivated ground, and by road-sides, very common.

This is one of the commonest plants about Woodside, remaining in flower all the year round. The Blue variety (*β. cærulea*,) is very rare, and an elegant white variety has been found at New Brighton.

A. TENELLA, Linn. Bog Pimpernel. July, Aug. 2
 Crosby Marsh, Garston, and Green Bank. *Dr. Bostock*, in *With.* Abundant on Seaforth Common. Occasionally in damp grassy spots, among the sand-hills between New Brighton and Wallasey.

P. VULGARIS, Huds. Common Primrose. April, May. 2
 In woods, hedge banks, and shady places, very common.

P. VERIS, Linn. Common Cowslip. April, May. 2
 Sefton Meadows. *Dr. Dickinson.* In a field near the Mount, Upper Tranmere. Amongst gorze bushes at the back of the sand-hills at New Brighton. *Bebbington. Dr. Dickinson.* Little Sutton. *R. Slack.*

Though this plant must doubtless grow nearer Liverpool than in the localities given, still I cannot learn any nearer localities from my botanical friends, some of them never having seen it in this neighbourhood. The flowers are, however, abundant in all the Liverpool markets, coming doubtless from the interior of the country.

GLAUX. Linn. Sea Milkwort.

G. MARITIMA, Linn. Common Sea Milkwort. July. 2
 North and South Shore of Liverpool. Muddy inlets of the Mersey, common; as Wallasey, Bromborough Pool, &c.

SAMOLUS. Linn. Brook-weed.

S. VALERANDI, Linn. Brook-weed, or Water Pimpernel. July. 2

In a small stream that runs through the sand-hills beyond Bootle. In a marshy place, opposite the Poulton Hotel, (where *Smyrniolum olusatrum* grows.) In a marshy spot between Gilbrook and Wallasey Pool. *Wilson Armistead.* On the right hand side of the old Bidston road, about a quarter of a mile from Cleveland Cottage. *H. Shepherd.*

ORDER LXII. PLUMBAGINACEÆ. The Leadwort Family.

STATICE. *Linn.* Thrift. *Pentandria—Pentagynia.*

S. ARMERIA, *Linn.* Common Thrift. July, Aug. 24
North and South Shore of Liverpool. Muddy inlets of the Mersey, as Wallasey, Bromborough Pool, &c.

S. LIMONIUM, *Linn.* Sea Lavender. July, August. 24
Muddy inlets of the Mersey, as Wallasey Pool, &c. Garston. *J. S. in Herb.*

Statice spathulata is inserted in the New Botanists' Guide, as having been found on Hilbre Island.

LITTORELLA. *Linn.* Shore-weed. *Monœcia—Triandria.*

L. LACUSTRIS, *Linn.* Plantain Shore-weed. June. 24
Crosby Marsh. *Dr. Bostock, in With.* On the north shore beyond Bootle. *H. Shepherd.* Cheshire. *J. E. Bowman, in New Bot. Guide.* On the borders of a pond near Oxtun. *A. Murray.*

ORDER LXIII. PLANTAGINACEÆ. The Plantain Family.

PLANTAGO. *Linn.* Plantain. *Tetrandria—Monogynia.*

P. MAJOR, *Linn.* Greater Plantain. June, July. 24
In pastures, and by roadsides, very common.

There are specimens in the Herbarium at the Botanic Gardens of an extraordinary paniced variety of this plant, ("var. *latifolia spica multiplica sparsa.*" *Willd.*) I have found, in damp spots at the site of the old Botanic Gardens, a curious variety with a proliferous spike, disposed in a rose-like form. (Var. 3. *With. Rosea. Bauh.*)

P. LANCEOLATA, *Linn.* Ribwort Plantain. June, July. 24
Meadows, and by road-sides, very common.

P. MARITIMA, *Linn.* Sea-side Plantain. June—Sept. 24
North and south shore of Liverpool. Muddy inlets of the Mersey, as Wallasey, Bromborough Pool, &c.

P. CORONOPUS, *Linn.* Buck's-horn Plantain. June, July. ☉
In similar situations with the preceding, and sometimes inland.

SUB-CLASS IV. MONOCHLAMYDEÆ.

ORDER LXV. CHENOPODIACEÆ. The Chenopodium Family.

SALICORNIA. *Linn.* Glasswort. *Monandria—Monogynia.*S. HERBACEA, *Linn.* Jointed Glasswort. Aug. Sept. ☉

Muddy shores of the Mersey, as Wallasey Pool, &c.

When young it is herbaceous and very succulent, it is then gathered and sold in several places for Samphire. Specimens may be found in an intermediate state between its shrub-like and herbaceous appearance. In its tender, and in its advanced state, it has been considered as distinct species. *Flora Danica*, p. 303, gives a good figure. It is very unusual to find in Gerard so uncharacteristic a figure, and Morison seems to have copied the same. *Col. Vellay's MS. notes.*

SALSOLA. *Linn.* Saltwort. *Pentandria—Digynia.*S. KALI, *Linn.* Prickly Saltwort. July. ☉

Sea shore at Bootle, and New Brighton.

CHENOPODIUM. *Linn.* Goosefoot. *Pentandria—Digynia.*C. MARITIMUM, *Linn.* Annual Sea-side Goosefoot. July, Aug. ☉Wallasey Pool, very abundant. Along the Parkgate Shore. *Miss E. Potts.*C. BONUS HENRICUS, *Linn.* Mercury Goosefoot. Aug. ♀

On waste ground, and by roadsides, near villages or farm houses. Allerton, in great abundance. *J. S. in Herb.* Walton. *R. Tudor.* About Wallasey, Bidston, Eastham, &c., frequent.

C. RUBRUM, *Linn.* Red Goosefoot. Aug. Sept. ☉

In waste and cultivated ground, frequent.

C. MURALE, *Linn.* Nettle-leaved Goosefoot. Aug. ☉

On waste ground, &c. near villages. Near Speak. *J. S. in Herb.* Below Egremont. *Dr. Dickinson.* Occasionally about Woodside. Parkgate Shore. *Miss E. Potts.*

C. ALBUM, *Linn.* White Goosefoot. July, Aug. ☉

In waste and cultivated ground, very common.

Chenopodium olidum is naturalised on the site of the Old Botanic Garden in very great abundance.

ATRIPLEX. *Linn.* Orache. *Polygamia—Monœcia.*

A. PORTULACOIDES, *Linn.* Shrubby Orache. July, Aug. 24
Garston. *J. S. in Herb.* Wallasey Pool, very plentiful.

The whole plant is of a very elegant glaucous hue, and abounds with fossil alkali or soda.

A. PATULA, *Linn.* Spreading Halberd-leaved Orache. July. ☉

On waste ground, inland, very common, and about Wallasey Pool, frequent.

“ This species has the nearest affinity to *A. angustifolia*, with which it has also been frequently confounded. But the *A. angustifolia* is much taller, has not the reddish colour, nor the crowded stem, but has its branches at a distance from each other. Fewer scales are observable, and the lowermost leaves only are hastate, those farther up being lanceolate, and quite entire. The leaflets of the calyx are nearly smooth, at least they have only some small bunches on the margin. *Atriplex* is essentially distinguished from *Chenopodium* by its polygamous flowers, and by the two-leaved calyx of the female flowers.”

A. ANGUSTIFOLIA, *Sm.* Narrow-leaved Orache. July. ☉

In similar situations to the preceding, frequent.

A. LITTORALIS, *Linn.* Grass-leaved Sea Orache. July. ☉

Wallasey Pool, not uncommon.

ORDER LXVI. POLYGONACEÆ. The Buck-Wheat Family.

RUMEX. *Linn.* Dock and Sorrel. *Hexandria—Trigynia.*

R. HYDROLAPATHUM, *Huds.* Great Water Dock. July, Aug. 24

In a pond behind Tranmere Church. On Bidston Marsh. *R. Tudor.*

R. CRISPUS, *Linn.* Curled Dock. June, July. 24

In pastures, and by roadsides, and in waste places, very common.

R. ACUTUS, *Linn.* Sharp Dock. July. 24

In moist places, and by the side of ponds, not uncommon.

R. OBTUSIFOLIUS, *Linn.* Broad-leaved Dock. July. 24

In waste places, and by roadsides, very common.

R. ACETOSA, *Linn.* Common Sorrel. June, July. 24

In meadows and pastures, frequent.

The leaves, which are powerfully acid, are eaten in salads. Deering observes it is called Green-sauce, because "the country people beat the herb to mash, and, mixed with vinegar and sugar, eat it as sauce for roasted meat."

R. ACETOSELLA, Linn. Sheep's Sorrel. May—July. 2

In dry barren ground, frequent. Very abundant about Bidston stone-quarry.

There are specimens in the Herbarium at the Botanic Gardens marked *Rumex maritimus?* from Hoylake; and Mr. A. Stewart has a specimen from Bootle, which he takes to be *R. maritimus*.

POLYGONUM, Linn. Persicaria. *Octandria—Trigynia*.

P. BISTORTA, Linn. Bistort, or Snakeweed. June. 2

In a damp meadow on the left-hand side of Edge Lane, near Speaklands. *A. Murray*. In a wood at Fazakarley, by the roadside. High ground above Woodside. *H. C. Watson*.

P. AVICULARE, Linn. Knot-grass. May—Sept. ☉

In waste ground, and by roadsides, very common.

VAR. β . MARITIMUM, P. MARITIMUM, Ray. Syn.

On the sea-shore at Bootle.

P. CONVULVULUS, Linn. Climbing Buckwheat. July, Aug. ☉

In cultivated fields, and waste places, common.

P. AMPHIBIUM, Linn. Amphibious Persicaria. July, Aug. 2

a. aquaticum. Abundant in the canal at Bootle. Wirral, but not common. *β . terrestre*. Frequent by roadsides, and in places where water has stood during winter.

Sir J. E. Smith states, that this last variety rarely flowers, but with us it is not at all an uncommon circumstance to find it in flower.

P. PERSICARIA, Linn. Spotted Persicaria. Aug. ☉

In moist places, and waste ground, very common.

P. LAPATHIFOLIUM, Linn. Pale-flowered Persicaria. Aug. ☉

In waste places, and by roadsides, common.

P. HYDROPIPER, Linn. Biting Persicaria. Aug. Sept. ☉

By the side of ditches, and in marshy places, very common.

(*Polygonum minus*, I believe, might be found both in the neighbourhood of Liverpool, and about Woodside; but, before I received the plant this autumn from the neighbourhood of Manchester, I was not well

acquainted with it. In the British Flora it is stated to occur, amongst other counties, in Cheshire and Lancashire, "on gravelly, watery commons.")

ORDER LXXII. EUPHORBIACEÆ. The Spurge Family.

EUPHORBIA. *Linn.* Spurge. *Monœcia—Monandria.*

E. HELIOSCOPIA, *Linn.* Sun Spurge. July, August. ☉

In waste and cultivated ground, very common.

E. PARALIA, *Linn.* Sea Spurge. Aug. Sept. ♀

Bootle, very rare. Sand-hills about Formby. *Dr. Bostock, in With.*

This elegant species is only known to Mr. Tudor in one locality, at Bootle, and only very sparingly. It however occurs at Southport, for there are specimens from there, in the Herbarium at the Botanic Gardens, and it is included in the list of plants growing in that neighbourhood, published in the Guide to Southport. The following species, however, is not mentioned in that work, nor were there specimens in the Herbarium at the Botanic Gardens, till Mr. Tudor kindly gave some. It is therefore not unlikely that about Formby and Southport it is more common than *E. portlandica*.

E. PORTLANDICA, *Linn.* Portland Spurge. Aug. ♀

In great abundance among the sand-hills between Bootle, and the river Alt.

E. EXIGUA, *Linn.* Dwarf Spurge. July. ☉

In dry barren fields, and by roadsides, common.

E. PEPLUS, *Linn.* Petty Spurge. July, August. ☉

In cultivated and waste ground, frequent.

MERCURIALIS. *Linn.* Mercury. *Diœcia—Enneandria.*

M. PERENNIS, *Linn.* Perennial or Dog's Mercury. April, May. ♀

Woods and shady places, inland, frequent. About Otterspool and Childwall. *Dr. Dickinson.* Common in Bromborough and Eastham Woods, &c.

ORDER LXXIII. URTICACEÆ. The Nettle Family.

SUB-ORDER. URTICEÆ.

PARIETARIA. *Linn.* Wall Pellitory. *Tetrandia—Monogynia.*

On the wall of Bidston Church-yard. Birkenhead Abbey Walls* (?) *A. Stewart*.

URTICA. *Linn.* Nettle. *Monœcia—Tetrandria*.

U. PILULIFERA, *Linn.* Roman Nettle. June, July. ☉

West Derby. *Dr. Dickinson*.

U. URENS, *Linn.* Small Nettle. June—Oct. ☉

In waste ground, frequent.

U. DIOICA, *Linn.* Great Nettle. July, Aug. ♀

In waste places, and by roadsides, frequent.

HUMULUS. *Linn.* Hop. *Diœcia—Pentandria*.

H. LUPULUS, *Linn.* Common Hop. July. ♀

In hedges occasionally, but not common. Near Aigburth, and Garston. *H. Shepherd*. Bootle. *R. Tudor*. Eastham. Oxtan. *A. Stewart*.

SUB-ORDER. ULMEÆ.

ULMUS. *Linn.* Elm. *Pentandria—Digynia*.

U. CAMPESTRIS, *Linn.* Common Small-leaved Elm. March, April. ♀

In hedges and plantations, occasionally, but not native. *Dr. Dickinson*.

U. MONTANA, *Bauh.* Broad-leaved Elm. March, April. ♀

In similar situations to the last. *Dr. Dickinson*.

U. SUBEROSA, *Linn.* Cork-barked Elm. March. ♀

In hedges and plantations, occasionally, but not native. *Dr. Dickinson*.

* On the ruins of Birkenhead Priory, which were formerly open to the public, Mr. Stewart used to find a great variety of plants, but it is doubtful whether they would be found there now. Mr. Stewart mentions the following among others, as having been found there by him some years ago, viz. ; *Fumaria capreolata*, *Parietaria officinalis*, *Linaria Cymbalaria*. In the rear of the Priory, is the Priory House, which formerly appeared delightfully situated on a rising spot of fertile ground. The house, surrounded by a thriving plantation, the ruins of the priory decorated with the faithful Ivy, and the new church, form altogether very pleasing objects. Permission may be obtained at any time to visit the remains of the Priory, on application to the Rev. Andrew Knox, whose grounds are delightfully situated among the ruins.

ORDER LXXIV. AMENTACEÆ.* The Amentaceous Family.

SUB-ORDER. SALICINÆ.

SALIX. *Linn.* Willow. Sallow and Osier. *Diæcia—Diandria.*

S. CAPREA, *Linn.* Great Round-leaved Sallow. April, May. *h*

Neighbourhood of Liverpool. *Dr. Dickinson.* Wirral. *H. C. Watson.*

S. FUSCA, *Linn.* Dwarf Silky Willow. April, May. *h*
Bootle. *Dr. Dickinson.* New Brighton. *H. C. Watson.*

VAR. ζ . ARGENTEA. S. ARGENTEA. *E. B. t.* 1364.

Bootle. *Dr. Dickinson.* New Brighton. *H. C. Watson.*

S. VIMINALIS, *Linn.* Common Osier. April, May. *h*
Neighbourhood of Liverpool. *Dr. Dickinson.* Wirral. *H. C. Watson.*

S. FRAGILIS, *Linn.* Crack Willow. April, May. *h*
In hedges and by the side of ponds, frequent. *Dr. Dickinson.*

Professor Henslow remarks that the recent reduction of six species to one, (alluding to *fusca* and its varieties,) may encourage the hope that further observation, assisted by experiment, will some day enable the students of this intricate genus to tell us how few species it really contains.

POPULUS, *Linn.* Poplar. *Diæcia—Octandria.*

P. ALBA, *Linn.* Great White Poplar. April. *h*
Neighbourhood of Liverpool. *Dr. Dickinson.* Wirral. *H. C. Watson.*

P. NIGRA, *Linn.* Black Poplar. April. *h*
Neighbourhood of Liverpool. *Dr. Dickinson.* Wirral. *H. C. Watson.*

* I have endeavoured to supply a list of the trees growing in the neighbourhood of Liverpool, through the kindness of my botanical friends, but I cannot answer how far any of the species are indigenous or otherwise. Their frequent occurrence, however, in hedges, plantations, and other situations, makes it necessary to include them in a work professing to enumerate the plants growing round Liverpool.

SUB-ORDER. MYRICEÆ.

MYRICA. *Linn.* Gale. *Diœcia—Tetrandria.*

M. GALE, *Linn.* Sweet Gale. May. ♀

Near Litherland, Crosby Marsh, and Ince Blundell. *H. Shepherd.*

SUB-ORDER. BETULINEÆ.

BETULA. *Linn.* Birch. *Monœcia—Polyandria.*

B. ALBA, *Linn.* Common Birch. April, May. ♀

Neighbourhood of Liverpool. *Dr. Dickinson.* Wirral. *H. C. Watson.*

ALNUS. *Tourn.* Alder. *Monœcia—Tetrandria.*

A. GLUTINOSA, *Gært.* Common Alder. March, April. ♀

Aighurth, Garston, &c. *Dr. Dickinson.* Tranmere Wood, Gilbrook, &c. *Wilson Armistead.*

SUB-ORDER. CUPULIFERÆ.

FAGUS. *Linn.* Beech. *Monœcia—Polyandria.*

F. SYLVATICA, *Linn.* Common Beech. April, May. ♀

Common about Liverpool, as Allerton, Aighurth, Toxteth Park, &c. *H. Shepherd.* Wirral. *Dr. Dickinson.*

QUERCUS, *Linn.* Oak. *Monœcia—Polyandria.*

Q. ROBUR, *Linn.* Common British Oak. April, May. ♀

Woods, and hedges, common.

CORYLUS. *Linn.* Hasel Nut. *Monœcia—Polyandria.*

In woods and hedges, common.

ORDER LXXV. CONIFERÆ, or PINACEÆ. The Fir Family.

TAXUS. *Linn.* Yew. *Diœcia—Monadelphica.*

T. BACCATA, *Linn.* Common Yew. March. ♀

In church yards, occasionally.

There is a very interesting specimen, in Eastham Church Yard, of a very great age, with one side entirely dead, and the other fresh and vigorous, which is well worthy of being sketched and lithographed.

PINUS. *Linn.* Fir. *Monœcia—Monadelphia.*

P. SYLVESTRIS, *Linn.* Scotch Fir. May, June. 7

Common in plantations, but not native.

CLASS II. MONOCOTYLEDONS ; or, ENDOGENS.

ORDER LXXVI. HYDROCHARIDACEÆ. The Frog-bit Family.

STRATIOTES. *Linn.* Water Soldier. *Polyandria—Pentagynia.*

S. ALOIDES, *Linn.* Water Soldier. July. 24

In a deep pond between Bootle and Walton, but not observed in flower by Mr. Tudor.

HYDROCHARIS. *Linn.* Frog-bit. *Diœcia—Enneandria.*

H. MORSUS RANÆ, *Linn.* Common Frog-bit. July. 24

Bootle. *J. S. in Herb.* Very common in the ditches on Bidston Marsh.

ORDER LXXVII. ORCHIDACEÆ. The Orchis Family. (The following Genera belong to *Gynandria—Monandria.*)

ORCHIS. *Linn.* Orchis.

O. MORIO, *Linn.* Green-winged Meadow Orchis. June. 24

In meadows and pastures, frequent.

The green lines on the petals distinguish it from every other *Orchis*.—*Ray.*

O. MASCULA, *Linn.* Early Purple Orchis. June. 24

In woods, and pastures, frequent.

This is the first Orchis that appears in the spring, and one of the most common. Pastures, groves, and shady dells are adorned with its purple blossoms about the end of April, or the beginning of May. *Eng. Bot.*

O. LATIFOLIA, *Linn.* Marsh Orchis. June. 24

Moist meadows, near Crosby. In a field near the Old Hut, about eight miles from Liverpool. *J. S. in Herb.* In damp meadows at the back of the sand-hills between New Brighton and Wallasey.

There are specimens of a variety of this plant in the Herbarium at the Botanic Gardens, from a small pool of water on the north shore of Liverpool in 1801.

O. MACULATA, Linn. Spotted Palmate Orchis. June, July. 2

In meadows, and pastures, common.

Its white or pale flowers, more or less spotted and streaked, palmate tubers, and later time of flowering, will serve to distinguish this from *O. mascula*.

Orchis pyramidalis is mentioned to me as having been found at the back of the sand-hills at New Brighton, but I have not seen a specimen of it.

HABERNARIA. Br. Habernaria.**H. BIFOLIA, Br.** Butterfly Habernaria. June. 2

Near Sefton. *Dr. Dickinson*. In a field between Oakfield, North Birkenhead, and the old Bidston road. In marshy ground on the north side of Bromborough Pool, near the Mersey, plentiful. *R. Slack*. Bebbington. *Dr. Dickinson*.

NEOTTIA. Jacq. Lady's Tresses.**N. SPIRALIS, Rich.** Fragrant Lady's Tresses. Aug. Sept. 2

Near the Obelisk, Allerton. *J. S. in Herb.* Allerton, and in the woods at Ince, near Liverpool. *Dr. Bostock*, in With. Bootle Sands. *H. W. in New Bot. Guide*. Among the sand-hills near the Rock Fort, at the mouth of the Mersey, *H. W. sp. in New Bot. Guide*. Sand-hills between Bidston and Leasowe. *H. C. Watson*.

LISTERA. Br. Twayblade.**L. OVATA, Br.** Common Twayblade. June. 2

In grassy spots among the sand-hills near Bootle. Moist meadows near Crosby. *J. S. in Herb.* In a meadow at the back of Gilbrook, by the side of a projected road. *Wilson Armistead*. Sand-hills, New Brighton, sparingly. *A. Higginson*. Bebbington. *Dr. Dickinson*.

EPIPACTIS. Br. Helleborine.**E. LATIFOLIA, Sw.** Broad-leaved Helleborine. July, Aug. 2

Crosby Marsh. *J. S. in Herb.* In a moist grassy spot, among the sand-hills between Waterloo and Crosby.

E. PALUSTRIS, Sw. Marsh Helleborine. July. 2

Near Crosby. *J. S. in Herb.* In a moist grassy spot, among the sand-hills between Waterloo and Crosby.

ORDER LXXVIII. IRIDACEÆ. The Corn-Flag Family.**IRIS. Linn.** Iris, or Flower-de-Luce. *Triandria—Monogynia*.

I. PSEUD-ACORUS, *Linn.* Yellow Water Iris. June, July. 2
In watery places, common.

ORDER LXXIX. AMARYLLIDACEÆ. The Amaryllis Family.

NARCISSUS. *Linn.* Daffodil. *Hexandria—Monogynia.*

N. PSEUDO-NARCISSUS, *Linn.* Common Daffodil. March, April. 2

At Bank Hall, near Bootle. *R. Tudor.* In Mr. Blackburn's Park, at Hale. *H. Shepherd.* Upper end of Tranmere Wood, on the right-hand side of the stream that enters the wood. *H. C. W.* (Not seen by Mr. Watson lately, or by any other botanist that I am aware of.)

ORDER LXXX. TAMACEÆ. The Black Bryony Family.

TAMUS. *Linn.* Black Bryony. —*Diœcia—Hexandria.*

T. COMMUNIS, *Linn.* Common Black Bryony. June. 2
Frequent in hedges, and shady places about Liverpool. Common in Wirral.

ORDER LXXXI. SMILACEÆ. The Smilax Family.

CONVALLARIA. *Linn.* Lily of the Valley. *Hexandria—Monogynia.*

C. MAJALIS, *Linn.* Lily of the Valley. May. 2
On the side of Bidston stone-quarry.

This is, I suppose, the locality intended by Dr. Bostock, in Withering, "between Bidston and Woodside." It is difficult to find the plant, as it is concealed by the foliage of *Vaccinium Myrtillus*, and *Vitis Idæa*, amongst which it grows.

ORDER LXXXII. ASPHODELIACEÆ. The Asphodel Family.

(The following genera belong to *Hexandria—Monogynia.*)

ASPARAGUS. *Linn.* Asparagus.

A. OFFICINALIS, *Linn.* Common Asparagus. Aug. 2

On the North Shore, a short distance beyond Bootle Landmarks, (not observed in flower.)

The specimens that I have in my Herbarium are only 3 to 4 inches high, including the root. Mr. Tudor has never observed it to flower. In gardens a species of *Chrysomela*, named after the plant, lives upon it.

HYACINTHUS. *Linn.* Hyacinth.

H. NON-SCRIPTUS, *Linn.* Wild Hyacinth, or Bluebell.
May. 24

In woods, and shady places, common.

A white variety may occasionally be found in Eastham and Bromborough Woods. The present species is the genuine English *Hare-bell*: the little *Campanula*, whose blossom "nods on the summit of a stalk so slender as to appear supported by magic," and which we call the Heath-bell, is the Hare-bell of Scotland, while the Hare-bell of England is the Scottish Blue-bell, intimately associated with one of our most popular modern airs. *With.*

ALLIUM. *Linn.* Onion.

A. URSINUM, *Linn.* Broad-leaved Garlic. June. 24

West Derby. *R. Tudor.* Sefton woods, and near Childwall.
Dr. Dickinson.

I can recollect some labourers, who were digging up a plantation in Essex, where this plant abounded, so much affected by the smell arising from the plant as to be obliged to suspend their work. The odour arising from the plant was much increased by its being bruised.

ORDER LXXXVI. JUNCACEÆ. The Rush Family.

(The following Genera belong to *Hexandria—Monogynia.*)

NARTHECIUM. *Huds.* Bog Asphodel.

N. OSSIFRAGUM, *Huds.* Lancashire Bog Asphodel. July,
Aug. 24

Kirkby. *R. Tudor.* Gill Moss, near Knowsley. *H. Shepherd.*
On Bidston Heath, towards Oxtown village, but not common.

JUNCUS. *Linn.* Rush.

J. GLAUCUS, *Sibth.* Hard Rush. July. 24

In wet pastures, and by the side of ditches, very common.

Leers has characterised this and *J. effusus* admirably well in his plates; but he mentions the culm as greatly lengthened above the panicle; this is not always the case. I think the acute form of the capsules, and the chestnut-colored glossy squamæ at the base, discriminate this from *J. effusus*. *Col. Velley's MS. notes.*

J. EFFUSUS, Linn. Soft Rush. July. 2

In watery places, and in ditches, very common.

Leers notices the panicle "*pedunculis sursum deorsum que vergentibus.*" The obtuse form of the capsules, which equal the petals in length, discriminate this species. *Col. Velley's MS. notes.*

J. CONGLOMMERATUS, Linn. Common Rush. July. 2

In watery places, and by roadsides, frequent.

J. MARITIMUS, Sm. Lesser Sharp Sea Rush. Aug. 2

North shore at Bootle. *J. S. in Herb.* (marked *J. acutus.*) Lancashire. *Rev. W. Wood, in Eng. Fl.* Wallasey Pool, very abundant, and also at the back of the sand-hills between Hoylake and Kirby.

J. LAMPOCARPUS, Ehrh. Shining-fruited Jointed Rush.
July, Aug. 2

In watery places, and by the side of ponds, very frequent.

J. COMPRESSUS, Jacq. Round-fruited Rush. Aug. 2

North shore at Bootle near the Land-marks. Very abundant in Wallasey Pool, and other muddy inlets of the Mersey.

This, I consider, is var. β . of the British Flora, (*J. cænosus* of Eng. Fl.) There are specimens in the Herbarium at the Botanic Gardens of a curious dwarf variety, about two inches high, from Bootle Marsh.

J. BUFONIUS, Linn. Toad Rush. August. ☉

In places where water has remained during winter, by roadsides, and by the side of ditches, very common.

Certainly the most common Rush with us.

J. ULIGINOSUS, Sibth. Lesser Bog Jointed Rush. Aug. 2

In marshy places, and by the side of ponds, frequent.

J. SUBVERTICILLATIUS, Wulf. Whorled-headed Rush.

In ditches between Little Crosby and Ince, not uncommon. *R. Tudor.* Bidston Marsh.

J. SQUARROSUS, Linn. Heath Rush. June, July. 2

Abundant on Seaforth Common. Very plentiful on Bidston Heath.

The numerous, somewhat spreading radical leaves form conspicuous circular mounds on the heaths and commons, several inches above the surrounding ground, and when the leaves begin to change colour, these mounds have a very pleasing effect.

LUZULA.* *De Cand.* Wood-rush.

L. SYLVATICA, *Bich.* Great Hairy Wood-rush. May, June. 2

In woods and shady situations, common.

✓ L. PILOSA, *Willd.* Broad-leaved Hairy Wood-rush. April, May. 2

In woods, and shady places, frequent.

The leaves in this and *L. campestris* have fine white hairs, which seem, as Mr. Curtis observes, fixed on by accident. The flowers in this species are single, and not produced in clusters, as in *L. campestris*. *Col. Velley's MS. notes.* In Tranmere Wood this occurs with rather narrower foliage, and, from not attending to the other characters, I was led into error, and published it as *L. Forsteri*, in a "List of Plants collected in the summer of 1836," inserted in the second volume of the "Naturalist."

✓ L. CAMPESTRIS, *Br.* Field Wood-rush. April, May. 2

In meadows, and pastures, and shady places, very common.

There are specimens of *L. campestris* in the Herbarium at the Botanic Gardens, from the "foot of some moist rocks, near the Pottery, on the south shore" (of Liverpool,) from twenty to thirty inches high, and except in the foliage much resembling *L. sylvatica*.

VAR. β. L. CONGESTA, *Lej. Eng. Fl.* Bog Wood-rush.

In marshy, boggy ground, frequent.

Before I had seen the British Flora of Sir W. J. Hooker, in which this is reduced to a variety, I was of opinion that it could not possibly stand as a species, as my friend Mr. Stewart and myself collected several specimens on a boggy piece of ground, at the base of Bidston stone-quarry, showing the gradual change in the mode of inflorescence, according to the degree of moisture.

ORDER LXXXVII. ALISMACEÆ. The Water Plantain Family.

ALISMA. *Linn.* Water Plantain. *Hexandria—Polygnia.*

A. PLANTAGO, *Linn.* Greater Water Plantain. July. 2

In watery places, very common.

A. RANUNCULOIDES, *Linn.* Lesser Water-Plantain. Aug. Sept. 2

* Though I am not an advocate for a needless change in names, still I cannot help regretting that the change proposed by the talented author of the English Flora has not been adopted. *Luciola* must strike every one as sounding much more elegant, and as being more classical than *Luzula*, which, as the author of the English Flora observes, is "neither Latin nor good Italian."

Bootle. *R. Tudor*. Crosby. *Dr. Bostock*, in *With*. In a marshy spot by the road-side near Fazakarley. Frequent in pits about Woodside, and between Woodside, and Bidston. In pits between Gilbrook and the Pool, by the side of the New Bidston Road. About Sutton Hall. *R. Slack*.

Mr. Stewart informs me that he saw, some years ago, *Sagittaria sagittifolia* in ditches, at Ince Blundell. If this discovery could be confirmed, or additional habitats discovered, it would be an interesting addition to the Flora of the neighbourhood.

BUTOMUS. *Lin.* Flowering-rush. *Enneandria—Hexagynia*.

B. UMBELLATUS, *Linn.* Common Flowering-rush. June, July. ♀

In ditches between Ince and the sea, north of Liverpool. *Mr. Shepherd*, in *With*. Formby. *R. Tudor*. In ditches in Bidston Marsh, not uncommon. In a pond below the village of Bidston. Pits going to Hoylake. *Miss E. Potts*.

TRIGLOCHIN. *Linn.* Arrow-grass. *Hexandria—Trigynia*.

T. PALUSTRE, *Linn.* Marsh Arrow-grass. Aug. ♀

In marshy situations, frequent. On the shore at Bootle, near the Land-marks, with the following. At Poulton, in a marshy spot opposite the Poulton Hotel. Gilbrook, on the left-hand side of the pond. Very plentiful on Bidston Marsh.

T. MARITIMUM, *Linn.* Sea-side Arrow-grass. May, Aug. ♀

Knot's-hole and Bootle. *Dr. Bostock*, in *With*. On the shore at Bootle, near the Land-marks. Muddy inlets of the Mersey, as Wallasey and Bromborough Pool, common.

ORDER LXXXVIII. AROIDEÆ, or ARACEÆ. The Arum Family.

SUB-ORDER. ARINEÆ.

ARUM. *Linn.* Cuckow-pint. *Monœcia—Polyandria*.

A. MACULATUM, *Linn.* Cuckow-pint. April, May. ♀

In shady hedges inland, not common. Childwall, and Sefton wood. *Dr. Dickinson*. Walton. *R. Tudor*. Old Hut, near Speak. *J. S. in Herb.* On the right-hand side of the road leading from Woodchurch, in a shady hedge, a little way past the church.

SUB-ORDER. PISTIEÆ.

LEMNA. *Linn.* Duckweed. *Diandria—Monogynia*.

L. TRISULCA, Linn. Ivy-leaved Duckweed. June, July. ☉

In ponds, and ditches, very common.

L. MINOR, Linn. Lesser Duckweed. July. ☉

In ponds, and ditches, very common.

L. POLYRRHIZA, Linn. Greater Duckweed. ☉

Kirkdale. *R. Tudor*. Cheshire. *J. E. Bowman*, MS. in *New Bot. Guide*.

SUB-ORDER. TYPHEÆ.

TYPHA, Linn. Cat's-tail, or Reed-mace. *Monœcia—Triandria*.

T. LATIFOLIA, Linn. Great Cat's-tail. July, Aug. ♀

In ponds, and marshy places, common.

T. ANGUSTIFOLIA, Linn. Lesser Cat's-tail. July. ♀

In ponds, and marshy places, equally common.

There are specimens in the Herbarium at the Botanic Gardens, of *Typha minor* from "a large marl pit north of Little Crosby," gathered in 1801. Sir W. J. Hooker, in his *British Flora*, doubts its occurrence in Britain. This plant, however, agrees in all its essential characters with his description. The barren and fertile catkins, being distant from each other, and the latter elliptical, the leaves also are linear-setaceous. It is also considerably smaller (less than half the size) than *T. angustifolia*, which about Woodside appears more frequent than *T. latifolia*.

SPARGANIUM, Linn. Bur-reed. *Monœcia—Triandria*.

S. RAMOSUM, Huds. Branched Bur-reed. July. ♀

In ponds, common.

S. SIMPLEX, Huds. Unbranched Upright Bur-reed. July. ♀

In ponds, common.

S. NATANS, Linn. Floating Bur-reed. July. ♀

Cheshire. *Sp. in Herb.* Near New Ferry. In a pond on the right-hand side of the road leading from Rock Ferry.

ORDER LXXXIX. POTAMACEÆ.* The Pondweed Family.

* The neighbourhood of Liverpool, as well as the hundred of Wirral, abounds with aquatic plants. Mr. H. Shepherd thinks that some addi-

POTAMOGETON. *Linn.* Pond-weed. *Tetrandria—Tetragynia.*

P. PECTINATUS, *Linn.* Fennel-leaved Pond-weed. July. 24

In clay-pits in the brick fields, near Liverpool. *H. Shepherd.*
In the canal at Bootle. *R. Tudor.* Cheshire. *sp. in Herb.*
Common in clay pits, near the Market at Woodside, by the side of the Chester road.

P. PUSILLUS, *Linn.* Small Pondweed. July. 24

Common about Liverpool. *H. Shepherd.* Crosby Marsh, and clay-pits, North shore. *J. S. in Herb.* Very abundant in clay-pits about Woodside, North Birkenhead, &c.

Mr. H. Shepherd has given me localities for *P. compressum*, which he considers as "truly distinct" from this plant; but I consider that they are referable to the following species, which seems not to have been understood by the late curator of the gardens. *P. compressum* is now united by Sir W. J. Hooker with *pusillum*.

P. GRAMINEUS, *Linn.* Grassy Pondweed. July. 24

Lancashire. *Mr. Wilson in Br. Fl.* North of Liverpool. *H. Shepherd.* Near Woodside. *sp. in Herb.* (marked *compressum*.)
In a pond on the left-hand side of the New Chester Road, a little way beyond Tranmere Hotel.

All the specimens in the Herbarium at the Botanic Gardens marked *P. compressum*, appear to me without doubt to belong to this plant. The panicles are scarcely longer than the spike, and are barely longer than the stipule. The leaves also are invariably raised much above the terminal spike. It appears a much larger plant, having the leaves much more crowded than what I have received as *P. pusillum*, β major, (*P. compressum*, *Eng. Bot.*) from Mr. W. A. Leighton, through Mr. Tudor.

P. CRISPUS, *Linn.* Curled Pond-weed. July. 24

Common in ditches, and in the canal at Bootle. Abundant in ditches on Bidston Marsh, and occasionally in ponds in Wirral.

tional species of Potamogetons might be found by any botanist who would devote some attention to this genus. Marl pits abound on both sides of the Mersey, and are caused in most instances by excavating for clay, for the purpose of making bricks. Before these pits are a year old, they are filled with aquatic plants, generally *P. pusillum* and *pectinatum*, *Zannichellia palustris*, and various species of *Chara* and *Lemna*. It would form an interesting subject of inquiry as to how these pits become so speedily filled with vegetation. Mr. H. Shepherd considers it most probable that the seeds have previously laid dormant in the soil, till, by being exposed to the light, or acted on by other favourable causes, vegetation commences. It will not be out of place to remark that these pits also contain an abundance of fresh-water shells, of the Genera *Physa*, *Planorbis*, *Succinea*, *Cyclas*, *Lymnea*, &c.

P. PERFOLIATUS, Linn. Perfoliate Pond-weed. July. ♀

Abundant in the canal at Bootle, forming dense floating masses, thereby impeding the navigation.

Mr. H. Shepherd considers this as an imported species, from some of the higher parts of the canal, as he has never found it in any other situation in the neighbourhood of Liverpool, nor have I ever met with it in Cheshire.

P. HETEROPHYLLUS, Schreb. Various-leaved Pond-weed. June, July. ☉

In a large ditch on Crosby Marsh, and in deep ditches, north of Crosby. *J. S. in Herb.* Bidston Marsh. *H. Shepherd.*

P. NATANS, Linn. Broad-leaved Pond-weed. June, July. ♀

In ponds, very common.

There are specimens in the Herbarium, at the Botanic Gardens, from "a pond by the side of the footpath leading from the canal to Waterloo," with very obovate leaves, and Mr. H. Shepherd has found it also in the canal at Litherland; he describes the leaves, as being of a much greener colour, and more coriaceous than when growing in pits. Small varieties with obovate leaves marked "Cheshire" in the Herbarium, very much resemble specimens which Mr. Tudor has had from Mr. W. A. Leighton, as *P. oblongus*.

There are specimens in the Herbarium marked *P. cuspidatum?* from Crosby, which somewhat resemble *P. heterophyllum*, but I am unable to say which species they really are.

RUPPIA, Linn. Ruppia. *Tetrandria—Tetragynia.***R. MARITIMA, Linn.** Sea Ruppia. July, Aug. ♀

Crosby. *R. Tudor.* In pits (?) north of Liverpool. *H. Shepherd.* Birkenhead Pool. *J. S. in Herb.* In ditches by the shore, just beyond Tranmere Hotel. In ditches by the side of Wallasey Pool, towards Bidston Marsh.

If not found in fruit the foliage very much resembles the following species, which, owing to the slight attention I have paid to aquatic plants, I have never found in fruit. "At the time of flowering the spadix lengthens remarkably, to the height of five or six inches or more, and becomes spirally twisted," in which state I have not unfrequently found it. I am rather inclined to think that the locality near Bidston Marsh was not salt water, as I did not perceive that the ditches communicated with the pool.

ZANNICHELLIA, Linn. Horned-pondweed. *Monœcia—Monandria.***Z. PALUSTRIS, Linn.** Common Horned-pondweed. Aug. ☉

Pools of water north of Liverpool; Crosby Marsh. *J. S. in Herb.* Tranmere Pool. *J. Shepherd*, in *With.* Common in Cheshire. *H. Shepherd*. In pits close to Parkgate. *Miss E. Potts*.

ZOSTERA. *Linn.* Grass-wrack. *Monœcia—Triandria.*

Z. MARINA, *Linn.* Common Grass-wrack. Summer. ♀

Formby. *R. Tudor*. Clay-pits (?) North shore of Liverpool; and Tranmere Pool. *H. Shepherd*.

ORDER XC. CYPERACEÆ. The Sedge Family.

RHYNOSPORA. *Vahl.* Beak-rush. *Triandria—Monogynia.*

R. ALBA, *Vahl.* White Beak-rush. June—Aug. ♀

Gill Moss, near Knowsley. *H. Shepherd*. On all the moors in Lancashire. *B. G.* On almost all the bogs in Cheshire. *B. G.* (Not seen by myself any where about Woodside.)

ELEOCHARIS. *Br.* Spike-rush. *Triandria—Monogynia.*

E. PALUSTRIS, *Br.* Creeping Spike-rush. June, July. ♀

In ponds and marshy places, frequent.

E. PAUCIFLORA, *Link.* Chocolate-headed Spike-rush. July, Aug. ♀

Bootle and Crosby. *R. Tudor*. Near the bridge betwixt Bootle and Crosby, (the specimens in the Herbarium marked *E. multicaulis* in error.) Heath above Tranmere. *H. W. sp. in New. Bot. Guide.*

Sir J. E. Smith observes that the radical leaves resemble the stems, and sometimes exceed them in height.

E. CÆSPITOSA, *Link.* Scaly-stalked Spike-rush. June, July. ♀

Bootle, common. *R. Tudor*. Very abundant on Bidston Heath.

E. FLUITANS, *Hook.* Floating Spike-rush. June, July. ♀

Bootle. *R. Tudor*. Near Crosby. *J. S. in Herb.* In ponds occasionally in Wirral, but not common. Abundant in a pond behind Cleveland Cottage, North Birkenhead.

There are specimens of *E. acicularis* from Childwall Common, in the Herbarium at the Botanic Gardens, and I have no doubt but what it might be found also in Cheshire, by any persons well acquainted with this Genus.

BLYSMUS. *Panz.* Blysmus. *Triandria—Monogynia.*

B. RUFUS, Link. Narrow-leaved Blysmus. July. 24

Near Rimrose bridge between Bootle and Crosby. *J. S. in Herb.* Abundant in some marshy ground at Bootle, beyond the Land-marks.

A curious variety of this plant grows in moist places at Bootle, where it has acquired a very curious habit, very different to its usual state; the stem extending above the spike, similar to *S. lacustris*, and the spike consisting of but few florets; this change is evidently owing to its moist situation, as the gradual change may be traced to its typical form, according to the degree of moisture in the locality.

There are specimens of *B. compressus* in the Herbarium at the Botanic Gardens, from the north shore of Liverpool, but I am not aware of its having been found there recently by any botanist.

SCIRPUS, Linn. Club-rush. *Triandria—Monogynia.***S. LACUSTRIS, Linn.** Bull-rush. July, Aug. 24

Walton. *R. Tudor.* Crosby Marsh. *J. S. in Herb.* Abundant in ditches on Bidston Marsh. Sparingly in a pond, in the field behind Cleveland Cottage.

Several botanists have remarked to me that this is not by any means so common a plant in the neighbourhood of Liverpool, or of Woodside, as it is in most districts.

S. SETACEUS, Linn. Bristle-stalked Club-rush. July, Aug. 24

Bootle Marsh, and north shore, near the Dog Kennels, (now destroyed.) *J. S. in Herb.* In a field by the right hand side of Rimrose brook, a little distance beyond the bridge. In pits close to Parkgate. *Miss E. Potts.*

Dr. Smith says, "*folia culmis similia sed breviora.*" The leaves in my specimens are all longer than the stems. The leaves are setaceous and canaliculated, in general they are awl-shaped. *Col. Velley's MS. notes.* There are some specimens marked *S. setaceus?* in the Herbarium at the Botanic Gardens, collected by Col. Velley at Portland, "on the rising ground facing to Weymouth, from a spring," in which he observes, that the spike is not absolutely terminal, as in *E. acicularis*; nor having the stem extending beyond it, as in *S. setaceus*.

S. MARITIMUS, Linn. Salt-marsh Club-rush. July, Aug. 24

On the shore at Bootle, near the Land-marks. Tranmere Pool, near the Catholic Chapel. Very abundant in Bidstone-Marsh, in ditches.

Col. Velley remarks, that Mr. Curtis has represented the spicæ longer than he has found it; probably from a luxuriant specimen from the banks of the Thames. Morison's figure has long peduncles. I observed that this species was turning yellow last autumn, while *S. lacustris* was of a lively green tint, and the contrast of the two growing together in large masses in the ditches on Bidston Marsh was very striking.

ERIOPHORUM. *Linn.* Cotton-grass. *Triandria—Monogynia.*

E. ANGUSTIFOLIUM, *Roth.* Common Cotton-grass. April. ♀

North-shore, near Bootle, Formby, &c. *Dr. Bostock*, in *With.*
Gill-moss, near Knowsley. *H. Shepherd.* Frequent near
Liverpool. *Dr. Dickinson.* Crosby Marsh. *J. S. in Herb.*

E. POLYSTACHION, *Linn.* Broad-leaved Cotton-grass.
April—June. ♀

Litherland. *R. Tudor.* Crosby Marsh. *J. S. in Herb.** Gill-
moss. *H. Shepherd.* Bidston Marsh. *R. Tudor.*

E. VAGINATUM, *Linn.* Hare's-tail Cotton-grass. March—
May.

Gill-moss, near Knowsley. *H. Shepherd.* Simmond's Wood
moss, half a mile beyond Walton. *A. Parr, sp.*

CAREX.† *Linn.* Carex, or Sedge. *Monœcia—Triandria.*

C. ARENARIA, *Linn.* Sea Carex. June. ♀

Abundant on the sand-hills on the shores of the Mersey.

It appears that this plant growing on our sand-hills is a variety of *C. arenaria*, named *C. Witheringii*. An excellent plate of it is given in *Withering*, and the localities are "south and north shores of Liverpool. *Dr. Bostock.*"

C. VULPINA, *Linn.* Great Carex. June. ♀

In wet places, and by the side of ditches, very common.

C. PANICULATA, *Linn.* Great-panicled Carex. June. ♀

Bootle Marsh. *J. S. in Herb.* In a marshy spot near Oakfield,
North Birkenhead, (with *Ranunculus Lingua.*) In marshy
situations in meadows, between Oxtun and Woodchurch.

* *Dr. Dickinson* is of opinion that this locality should be referred to *E. vaginatum*, which he considers as of more frequent occurrence than *E. polystachion*, and whether *Mr. Tudor's* localities should be referred to *vaginatum*, I cannot say, never having seen either of the species in a living state, and very rarely good dried specimens from this neighbourhood.

† The following list of Carices must not be taken as anything near a complete one, for neither *Mr. Tudor* or myself are well acquainted with the genus; not that I think it near so difficult as the genus *Rosa*, or *Rubus*, for with a careful examination and reference to the plates in *English Botany*, to confirm the species, I think that they can be made out satisfactorily. It is probable that many of the following species, for which I have only given particular localities, will be found to be pretty generally distributed.

The economy of this Sedge is very extraordinary, growing in clumps, and keeping the soil together, so as to form numerous mounds elevated three to four feet, or even sometimes more, above the marshy ground beneath, and sometimes so closely placed to each other, as to allow a person to walk from one to another, forming by these means a passage to many plants growing in the wet ground beneath, which could not otherwise be obtained.

C. STELLULATA, Gooden. Little Prickly Carex. May, June. 24

Bootle Marsh. *J. S. in Herb.*

This is generally a common species, and Dr. Dickinson thinks he has noticed it as common about Liverpool.

C. OVALIS, Gooden. Oval Spiked Carex. June. 24

Frequent about Bootle. *R. Tudor.* Wirral. *H. C. Watson.*
Common in Upton Meadows. *Dr. Dickinson.*

C. REMOTA, Linn. Remote Carex. June. 24

Wet ditches about Crosby. *J. S. in Herb.* Very frequent in shady hedge bottoms, about Woodside, &c.

C. STRIGOSA, Huds. Loose Pendulous Carex. May, June. 24

In the wood near the Old Hut, seven miles east of Liverpool.
J. S. in Herb.

C. SYLVATICA, Huds. Pendulous Wood Carex. May, June. 24

In woods, frequent, as Tranmere Wood, Gilbrook, &c.

C. PSEUDO-CYPERUS, Linn. Cyperus-like Carex. June. 24

Edge of marl ponds at Allerton. *J. S. in Herb.* Very common by the side of ponds about Woodside.

One of the most graceful and elegant of this genus, and very generally distributed over those parts of Wirral that I have visited.

C. OEDERI, Ehrh. Oederian Carex. May, June. 24

Bootle Marsh. *J. S. in Herb.* (specimens are marked *flava*.)
Common in damp grassy spots among the sand-hills at New Brighton, near the Rock Fort, but easily overlooked on account of its stunted growth.

I have specimens also from Southport, through the kindness of Miss Potts. It is considered by some botanists merely as a maritime variety of *C. flava*.

C. EXTENSA, Gooden. Long-bracteated Carex. June. 24

Near Liverpool. *Mr. W. Wilson, in Br. Fl.* Bootle. *R. Tudor.*
Bootle Marsh. *J. S. in Herb.* The Park, near Liverpool. *Dr.*

Bostock, in With. Tolerably plentiful on the north side of Bromborough Pool, near the Mersey.

The cultivated specimens of *C. Oederi*, *flava*, and *extensa*, in the Herbarium at the Botanic Gardens, are very much confused, and there are intermediate forms which would apparently connect the three species together.

C. DISTANS, Linn. Loose Carex. June. 24

On the south side of Tranmere Pool.

C. PRÆCOX, Jacq. Vernal Carex. April, May. 24

In pastures, barren, and heathy situations, common. Common about Bootle. *R. Tudor.* Allerton. *J. S. in Herb.* Very abundant on Bidston Heath.

The root is very creeping, throwing up fresh tufts of radical leaves at some distance from the parent plant; specimens may be obtained with three, and sometimes more plants attached in this manner by the creeping root.

C. PILULIFERA, Linn. Round-headed Carex. June. 24

The Park, Liverpool. *Dr. Bostock, in With.* Bootle Marsh. *J. S. in Herb.* Wirral. *H. C. Watson.*

C. PANICEA, Linn. Pink-leaved Carex. June. 24

Common in moist meadows, and pastures.

C. RECURVA, Huds. Glauous Heath Carex. June. 24

Common in moist meadows, and pastures.

These two species appear to be very nearly allied to each other, but Sir W. G. Hooker states, that the fruit offers good discriminating characters. The capsules are often affected with the smut, in which case they become globular, larger, black, and full of a mealy powder. Almost all the other species are occasionally liable to the same disease.

C. CÆSPITOSA, Linn. Tufted Bog Carex. May, June. 24

Seaforth Common. Near Linacre, and about Bootle, common. *R. Tudor.* Frequent in ponds and marshy places in Wirral.

C. STRICTA, Gooden. Straight-leaved Carex. April, May. 24

Crosby Marsh. *R. Tudor.*

C. RIPARIA, Curt. Great Common Carex. May. 24

Common about Rimrose brook. Frequent about Bootle. *R. Tudor.* Plentiful in a ditch between Oxtan and Woodchurch. Upton Meadows, not unfrequent. *Dr. Dickinson.*

C. AMPULLACEA, Gooden. Slender-beaked Bottle Carex.
June. 2

Allerton. *J. S. in Herb.* Rimrose brook. In a pond near Oakfield, North Birkenhead, (with *R. Lingua*,) and in the marshy ground adjoining.

C. HIRTA, Linn. Hairy Carex. May, June. 2

By the side of the Canal, between Bootle and Litherland, very abundant. In a marshy spot near Bootle Land-marks. Bootle, not uncommon. *R. Tudor.* Wirral, in several places. *H. C. Watson.* In the same pond as the former species, near Oakfield, the residence of Mr. J. R. Pim.

The hairiness of the leaves will not "clearly serve to distinguish this from every other species," as stated by Withering, for the specimens which grow in the Canal, at Bootle, are quite smooth, but when growing on the dry path they become hairy, and more dwarfish.

There are specimens in the Herbarium at the Botanic Gardens of *C. pulicaris*, from Toxteth Park; and *C. intermedia* is inserted in Withering as occurring in the same locality, on the authority of Dr. Bostock.

(The following is a list of those species, some of which would not be unlikely to be met with by any botanist, who paid attention to this genus. *C. intermedia*, *teretiuscula*, *pallescens*, *acuta*, *paludosa*, *versicaria*, and *muricata*, in marshy situations. *C. binervis*, on dry heaths, or moors. *C. curta*, *flava*, *dioica*, *fulva*, and *pulicaris*, on spongy bogs. I may mention also that *C. axillaris* has been found at Over, in Cheshire, by Mr. W. Wilson, as well as *C. filiformis*, in the same county.)

ORDER XCI. GRAMINACEÆ. The Grass Family.

(The following genera belong to *Triandria*—*Digynia*, except *Anthoxanthum*, which belongs to *Diandria*—*Digynia*; and *Nardus*, which belongs to *Triandria*—*Monogynia*.)

ALOPECURUS. Linn. Fox-tail Grass.

A. PRATENSIS, Linn. Meadow Fox-tail Grass. May—
June. 2

In meadows, and pastures, common.

A. AGRESTIS, Linn. Slender Fox-tail Grass. June, July. 2

Crosby. *J. S. in Herb.* Under the wall at the entrance to Crosby Rabbit Warren. *W. Wilson.* (Found there now?) Sparingly near Bidston village.

Mr. Curtis notices a singular appearance of a ring at the base of each floret. I am doubtful if the same may not be observed in a slighter degree in *A. pratensis*. *Col. Velley's MS. notes.*

This grass, so rare about Liverpool, is a great pest in the corn fields in Essex.

A. GENICULATUS, Linn. Floating Fox-tail-grass. July, Aug. 24

Very abundant in ponds and marshy places.

The glumes are noticed in the *Flora Britannica* as being "*duplo minores*," than those of *A. bulbosus*; but this is not always the case. The glumes of *A. pratensis* are full as large again as in the above. The growth of the stem and leaves is well expressed in the *Flora Danica*, t. 861, although that is a different grass, *Col. Velley's MS. notes*.

PHLEUM. Linn. Cat's-tail-grass.**P. PRATENSE, Linn.** Common Cat's-tail-grass. June. 24

Meadows and pastures, not unfrequent.

P. ARENARIUM, Linn. Sea Cat's-tail-grass. May, June. ☉

Sand-hills on the shores of the Mersey.

PHALARIS. Linn. Canary-grass.**P. ARUNDINACEA, Linn.** Reed Canary-grass. July, Aug. 24

By the side of ditches and ponds, not unfrequent. Walton. *R. Tudor*. Rimrose brook. Very plentiful in various localities about Woodside.

P. canariensis occurs occasionally about Liverpool, and there are specimens in the Herbarium at the Botanic Gardens, marked "Sand-banks, north shore;" but it ought not, I think, to rank amongst a list of the plants of the neighbourhood. I have never seen it in Cheshire.

HOLCUS. Linn. Soft-grass.**H. MOLLIS, Linn.** Creeping Soft-grass. July. 24

In pastures and hedges, common.

H. LANATUS, Linn. Meadow Soft-grass. June, July. 24

In pastures and shady places, common.

Col. Velley observes that this may be known from *H. mollis* by not having pointed spiculæ, or a creeping root.

ANTHOXANTHUM. Linn. Vernal-grass.**A. ODORATUM, Linn.** Sweet-scented Vernal-grass. May, June. 24

In pastures and shady places, very common.

MILIUM. Linn. Millet-grass.**M. EFFUSUM, Linn.** Spreading Millet-grass. June. 24

Speak. *Dr. Bostock, in With.* Old Hut, near Liverpool.
J. S. in Herb. In Tranmere Wood, plentiful.

This is the most elegant of its tribe. Birds are remarkably fond of the seeds, and it is an excellent grass to sow in game covers.

AGROSTIS. *Linn.* Bent-grass.

A. CANINA, Linn. Brown Bent-grass. June, July. 2

In moist places on a barren soil, frequent.

A. VULGARIS, With. Fine Bent-grass. June, July. 2

In meadows and pastures, as well as on the sand-hills on the shores of the Mersey, very common.

A. ALBA, Linn. Marsh Bent-grass. July, August. 2

In marshy situations and sometimes in corn-fields, common.

VAR. β . STOLONIFERA. A. STOLONIFERA, Linn. Fiorin-grass.

Near Liverpool. *Sir J. E. Smith in Herb.* North and south shores of Liverpool, and near Garston (the plant figured by Sowerby in *Eng. Bot.* t. 1532, from the same locality.) *J. S. in Herb.*

The stoloniferous character is very evident in this plant. *Dr. Withering* describes the panicle as compact, and thickly crowded with florets at the base. *Linnæus* notices the equal valves of the calyx, the outer one of which is serrated. *Col. Velley's MS. notes.*

There is great confusion in the specimens of the foregoing species of *Agrostis*, that are in the Herbarium at the Botanic Gardens, particularly with many specimens intermediate between *alba* and *stolonifera*; the specimen from which the drawing in *English Botany* was taken, is the only characteristic one. I have similar ones from Tynemouth, which I got during the late Meeting of the British Association at Newcastle. There are starved specimens from Toxteth Park, marked *A. setacea* (?), a very unlikely grass to occur in this neighbourhood. *Col. Velley's* remarks are very numerous and highly interesting, but would be better suited for publication in some of our Natural History Journals.

CALAMOGROSTIS. *Adans.* Small Reed.

C. EPIGEJOS, Roth. Wood Small Reed. July. 2

In woods, and shady places, not unfrequent. South shore of Liverpool, beyond the Potteries. *H. Shepherd.* In Gilbrook and Tranmere wood, very abundant, (in the latter locality, the panicle is of a pale green colour.)

In the Herbarium at the Botanic Gardens there are specimens marked *Arundo Calamagrostis*, from "near Birkenhead," and from "a clay bank in the Park, close in shore, about one mile from Liverpool," but I look

upon these localities as belonging to *C. Epigejos*. Mr. W. Wilson of Warrington, who kindly named the Cheshire specimens in my Herbarium, observes, that "*C. lanceolata* has the corolla longer than the calyx, and the whole plant is much more delicate. Hooker's specific characters are not happily constructed in these instances."

AMMOPHILA. *Host.* Sea-reed.

A. ARUNDINACEA, *Host.* Common Sea-reed. July. ♀

Very abundant on the sand-hills on the shores of the Mersey.

Dr. Bostock remarks in Withering, that it has been planted on the north shore of Liverpool, to bind the sand together; and probably, the same has been the case on the Cheshire side.

ARUNDO. *Linn.* Reed.

A. PHRAGMITES, *Linn.* Common Reed. July. ♀

In ditches, in marshy situations, and by the side of ponds, frequent.

AIRA. *Linn.* Hair-grass.

A. CÆSPITOSA, *Linn.* Turfy Hair-grass. June—Aug. ♀

In moist shady places, and in ditches, common.

In shady situations, in Gilbrook, I find it with a silvery-grey, or whitish panicle, probably from being partially excluded from the light. In ditches, the panicle is usually of a greenish-brown, and is truly elegant, though the grass is of no agricultural use, as cattle will not touch it.

A. FLEXUOSA, *Linn.* Waved Hair-grass. July. ♀

In heathy, and shady situations, frequent. Dingle, &c., near Liverpool. Bidston Heath, abundant, and by the side of Bidston Stone-quarry. Eastham Wood, &c.

A. CARYOPHYLLEA, *Linn.* Silvery Hair-grass. June, July. ♀

In heathy, and dry barren situations, frequent.

Withering remarks that the larger plants somewhat resemble *A. flexuosa*, but want the zigzag fruit-stalks (sometimes they are so in a less degree,) and the woolliness at the base of the blossom. The smaller plants may be distinguished from *A. præcox*, by the panicle expanding when ripe, and by the awn being less than twice the length of the calyx. It is, moreover, an annual plant.

A. PRÆCOX, *Linn.* Early Hairy-grass. May, June. ☉

In similar situations to the preceding, common.

This plant flowers very early in the summer and is soon over, but the withered stems remain throughout the year.

AVENA. *Linn.* Oat, or Oat-grass.

A. STRIGOSA, *Schrad.* Bristle-pointed Oat. June, July. ☉

In corn-fields, frequent.

A. PUBESCENS, *Linn.* Downy Oat-grass. June, July. ♀

Toxteth Park, near Knot's Hole. *J. S. in Herb.* Bootle ; and near Seacombe. *Dr. Dickinson.* Hilbre Island, very abundant.

Leers observes that the seeds seldom become ripe. The floscules are very pubescent at the base, or, more properly speaking, hairy. *Col. Velley's MS. notes.* "It is readily distinguished from other species of *Avena* by the beautiful purplish and silvery white florets."

ARRHENATHERUM. *Beauv.* Oat-like Grass.

A. AVENACEUM, *Beauv.* Common Oat-like Grass. June, July. ♀

In hedges and pastures, common.

An elegant writer on botany observes that this is truly a magnificent grass, with its panicle of flowers gently drooping to one side, at least one foot six inches in length, and so finely polished that, but for their green colour, we might think it was composed of silver oats. It is often affected by the disease termed rust.

TRIODIA. *Br.* Heath-grass.

T. DECUMBENS, *Beauv.* Decumbent Heath-grass. July. ♀

In dry heathy and barren situations, abundant. Toxteth Park. *Dr. Bostock, in With.* Childwall Common. *J. S. in Herb.* Seaforth Common, &c. Bidston Heath. Eastham Wood, &c.

POA. *Linn.* Meadow-grass.

P. FLUITANS, *Scop.* Floating Meadow-grass. July, Aug. ♀

In ponds and ditches, very common.

Mr. Hudson considered this as the species, and *Festuca pratensis* as one of its varieties ; Mr. Curtis shows them to be distinct. The unblown panicle of the *F. pratensis* on the right, in the *Flora Londinensis*, t. 44, from the small spikes being closely pressed to the stem, and from the form of the glumes, resembles the *fluitans*. I have found it in the same state. *Col. Velley's MS. notes.*

P. MARITIMA, *Huds.* Creeping Sea Meadow-grass. July, Aug. ♀

On the shore, north of Liverpool, beyond the Land-marks at Bootle. Birkenhead. *sp. in Herb.*

P. DISTANS, Linn. Reflexed Meadow-grass. July, Aug. ♀

By the side of the canal at Bootle. Very abundant by the side of Tranmere Slip. In various situations in Bidston Marsh, not uncommon.

Col. Velley observes, that *P. distans*, resembles *Aira* (*Catabrosa*) *aquatica* as to its spicula, and that Hudson made it a variety of it.

P. PROCUMBENS, Curt. Procumbent Sea Meadow-grass.
June—Aug. ☉

On the right-hand side of the canal between Sandhill's Bridge and Miller's Bridge. Brick fields, north of Liverpool. *R. Tudor*. (Formerly where the Prince's dock now is.) *W. Wilson*.

P. RIGIDA, Linn. Hard Meadow-grass. June. ☉

New Brighton. *Miss E. Potts*. Sand-hills near the Rock Fort. *A. Murray*. Cheshire. *sp. in Herb*.

P. TRIVIALIS, Linn. Roughish Meadow-grass. June, July. ♀

Meadows and pastures, and in moist situations, common.

P. PRATENSIS, Linn. Smooth-stalked Meadow-grass. June, July. ♀

In meadows and pastures, common, also on the sand-hills on the shores of the Mersey, (in which situations it appears to become the var. *γ. subcærulea*.)

P. ANNUA, Linn. Annual Meadow-grass. ☉ Spring and Summer. ☉

In meadows and pastures, waste ground, and by road-sides, very common.

There is no grass, says Mr. Curtis, better entitled to Ray's epithet of *vulgatissimum* than this, for it is common to every quarter of the globe, and occurs almost everywhere; in meadows, gardens, by the sides of paths, and on walls; flowering all the summer, and even in winter, if the weather be mild. When it grows in very dry situations it frequently does not exceed three inches, but in rich meadows it often grows more than a foot high. The panicle is usually green, but in open fields it frequently acquires a reddish tinge. *Baxter's Flowering Plants*.

Col. Velley remarks, that the spiculæ of the *Poas*, and their floscules, form but an uncertain criterion for establishing the specific characters of these grasses. The form of the leaves and stem, and the habit and structure of the plant, will frequently afford more satisfactory characteristics.

There was a specimen of *P. aquatica* in one of the collections sent in to Dr. Dickinson for the prize, marked "Prescot," but as the plant was wrong named, it is possible there may be some mistake in it.

CATABROSA. *Beauv.* Whorl-grass.C. AQUATICA, *Beauv.* Water Whorl-grass. May, June. 2

In ditches and moist places along the shore at Bootle.

There is a very small variety to be met with in the wet sand on the sea-shore beyond Bootle. It was first found there by Dr. Bostock, and is mentioned in Withering. It has also been noticed by Mr. W. Wilson, and is mentioned in the British Flora. Its small size is doubtless owing to its exposed situation, and to want of moisture, for it gradually gets larger as it recedes from the shore, and when growing in pools sheltered from the influence of the wind, it attains its usual size. The same variety has been found on the shore at Parkgate.

BRIZA. *Linn.* Quaking-grass.B. MEDIA, *Linn.* Common Quaking-grass. June. 2

In meadows and pastures, frequent; common on the clay banks, on the Cheshire side of the Mersey.

If a seed be carefully dissected under the microscope, the young plant will be found with its roots and leaves perfectly formed. *With.*

MELICA. *Linn.* Melic-grass.M. UNIFLORA, *Linn.* Wood Melic-grass. May—July. 2

Between Leatham and Blythe Hall, near Ormskirk. *Dr. Bostock, in With.* Very abundant in Tranmere Wood and Gilbrook.

M. CÆRULEA, *Linn.* Purple Melic-grass. Aug. 2

Common on heathy ground about Liverpool. Abundant on Bidston Heath.

This plant appears to vary much in height. In the neighbourhood of Liverpool it is only eight to twelve inches high, rarely fifteen inches; but on Woolston Moss, the specimens measure three feet, or more, with beautiful straight culms.

DACTYLIS. *Linn.* Cock's-foot-grass.D. GLOMERATA, *Linn.* Rough Cock's-foot-grass. July. 2

In meadows and pastures, very common.

CYNOSURUS. *Linn.* Dog's-tail-grass.C. CRISTATUS, *Linn.* Crested Dog's-tail-grass. July. 2

In meadows and pastures, frequent.

FESTUCA. *Linn.* Fescue-grass.F. OVINA, *Linn.* Sheep's Fescue-grass. June, July. 2

Very abundant on the sand-hills at New Brighton, and probably on the sand-hills at Bootle.

Mr. Wilson Armistead has specimens of the viviparous variety, (*ε. vivipara*, *F. vivipara*, *E. B.*) of this plant, which he found in Gilbrook, in moist situations.

Col. Velley, in noticing the frequent occurrence of viviparous states of different grasses in alpine situations, conjectures that it may be considered as a provision of nature, by converting into viviparous germs those parts of fructification, which from the want of genial warmth cannot attain a state of maturity.

F. DURIUSCULA, *Linn.* Hard Fescue-grass. June, July. ♀

In meadows and pastures, common, as well as on the sand-hills on the coast.

F. RUBRA, *Linn.* Creeping Fescue-grass. July. ♀

On the sand-hills on the shores of the Mersey, and in Wallasey Pool, common.

F. BROMOIDES, *Linn.* Barren Fescue-grass. June. ⊙

Abundant by way-sides in waste ground, and on the sand-hills on the shores of the Mersey.

Before flowering it has somewhat the appearance of starved specimens of *Bromus mollis*, (whence perhaps the name, as suggested to me by Mr. Tudor;) but when in flower it is difficult to be distinguished by the descriptions in our Floras, from *F. myurus*, or *uniglumis*; but the former, which has a much longer panicle, (four times as long, *Sm.*) does not occur I believe with us; the latter species is *only* found on the sand-hills, and has the panicle unilateral, and is usually of a tawny yellowish hue.

F. UNIGLUMIS, *Soland.* Single-glumed Fescue-grass. June.
⊙ (♂ *Sm.*)

Crosby sand-banks. *J. S. in Herb.* (marked *bromoides*.) Bootle sand-banks, sparingly. (?) *R. Tudor.* Very abundant on the sand-hills at New Brighton.

F. LOLIACEA, *Huds.* Spiked Fescue-grass. June, July. ♀

Banks of the Canal, at Bootle, (in 1837.)

F. PRATENSIS, *Huds.* Meadow Fescue-grass. June, July. ♀

In meadows and pastures, not uncommon. Abundant in a meadow near Brunswick Villa, Woodside, (the residence of Mr. W. Jackson,) where the salt-water overflows it.

F. ELATIOR, *Linn.* Tall Fescue-grass. July. ♀

Abundant on a clay bank below Egremont Hotel, on the shore of the Mersey.

Very different in appearance and habit from the foregoing, growing nearly four feet in height.

BROMUS. *Linn.* Brome-grass.

B. GIGANTEUS, Vill. Tall Brome-grass. July, Aug. ♀

VAR. β . TRIFLORUS. FESTUCA TRIFLORA, E. Bot. t. 1918.

Abundant in Tranmere Wood.

B. ASPER, Linn. Hairy Wood Brome-grass. June, July. ☉ or ♂

Moist woods, and shady places, frequent.

The tallest of our British Grasses, attaining in Tranmere Wood, in moist situations, five to six feet in height.

B. STERILIS, Linn. Barren Brome-grass. June, July. ☉

On dry hedge banks, common.

A very graceful grass with its elegant drooping panicle, but of no agricultural use. In autumn, after it has done flowering, it turns of a purplish hue.

B. MOLLIS, Linn. Soft Brome-grass. June. ♂

In meadows and pastures, and by roadsides, very common.

B. RACEMOSUS, Linn. Smooth Brome-grass. June, July. ☉

In a field on the right-hand side of the road from Tranmere to Rock Ferry, nearer the former. *H. C. Watson.*

B. SECALINUS, Linn. Smooth Rye Brome-grass. July, Aug. ☉

In corn-fields, occasionally, but not common.

Col. Velley remarks that its upright growth, close panicle, broad leaves, and light green colour, are its characteristic marks.

LOLIUM. *Linn.* Darnel.

L. PERENNE, Linn. Perennial Darnel. June, July. ♀

In meadows and pastures, very common.

The pastures about Woodside are principally composed of this grass.

L. TEMULENTUM, Linn. Bearded Darnel. July. ☉

In corn-fields occasionally, but not common.

TRITICUM. *Linn.* Wheat, or Wheat-grass.

T. REPENS, Linn. Creeping Wheat-grass. Summer. ☉

Borders of fields, and in waste places, frequent.

Leers says the creeping root of this grass is the real one which the ancients so highly valued for the sweet nutriment that it afforded both to men and cattle; see Hall. 1426. *Col. Velley's MS. notes.*

T. JUNCEUM, Linn. Rushy Sea Wheat-grass. July. ♀

On the sand-hills on the shores of the Mersey, common.

This grass is of a very elegant glaucous hue and very rigid habit. This, along with the other maritime grasses, seems designed by Nature to keep together the loose sand banks with their spreading roots, and thereby preventing the encroachments of the sea.

BRACHYPODIUM, Beauv. False Brome-grass.

B. SYLVATICUM, Beauv. Slender False Brome-grass. July. ♀

On hedge banks, and in shady places, common.

HORDEUM, Linn. Barley.

H. MURINUM, Linn. Wall Barley. June, July. ☉

Walton. *R. Tudor.* Frequent in Wirral. *H. C. Watson.*

Mr. Tudor, as well as other botanists, have remarked to me that this is comparatively a rare plant with us. I have never observed it myself in Cheshire. *Col. Velley* remarks that the ciliæ, at the base of the involucre, distinguish this species from the other two.

H. PRATENSE, Huds. Meadow Barley. July. ☉

Wallasey Pool, very abundant, as well as in meadows, particularly about Bidston Marsh, common.

Judging from its maritime situation, I took this to be *H. maritimum*, and published it as such in my Catalogue of Plants, in the second volume of the Naturalist; but on seeing *Col. Velley's* specimen of the true *maritimum* from Sheppy Isle, I discovered my error. *Col. Velley* observes that *Vaillant's* figure represents the bristle-formed involucre, which differs from that of *H. murinum*, in not being ciliated at the base.

NARDUS, Linn. Mat-grass.

N. STRICTA, Linn. Mat-grass. June. ♀

Abundant on Seaforth Common. On Bidston Heath, very abundant.

" This is easily distinguished from all other British Grasses by the florets having one style only; by the slenderness and rushy stiffness of

the culms and leaves ; and by the florets being thinly dispersed along the spike, mostly in pairs, and all pointing in one direction."

ROTTBOLLIA. Linn. Hard-grass.

R. INCURVATA, Linn. Sea Hard-grass. July, Aug.

Bootle shore near the Land-marks. Wallasey Pool. H. Shepherd.

DIVISION II.

Cellular,

OR,

ACOTYLEDONOUS PLANTS.

NOV 19 1951

U.S. DEPT. OF JUSTICE

RECORDS SECTION

U.S. DEPT. OF JUSTICE

CLASS III. ACOTYLEDONS ; or, CRYPTOGAMÆ.

ORDER XCII. EQUISETACEÆ.* The Horse-tail Family.

EQUISETUM. *Linn.* Horse-tail. *Cryptogamia—Filices.*

E. ARVENSE, *Linn.* Corn Horse Tail. April. 2

By the borders of fields, and in barren ground, very common.

E. FLUVIATILE, *Linn.* Great Water Horse-tail. April. 2

Cheshire. *sp. in Herb.* In moist places, in Gilbrook, not unfrequent. In ditches by the side of the foot-road, between Seacombe and Poulton.

The large and elegant sterile fronds frequently remain bleached throughout the winter. The fertile ones are often overlooked, from their flowering so early in the year.

E. LIMOSUM, *Linn.* Smooth Naked Horse-tail. June, July. 2

Allerton. *J. S. in Herb.* Bootle. *R. Tudor.* In ponds, and watery places, in Wirral, very common.

I did not well understand this, and the following species, till I had seen specimens in the Herbarium at the Botanic Gardens. This is, however, the commoner species in Wirral. In the specimens that I have in my Herbarium, the branches have made their appearance, though the catkin has not decayed, but they are very irregular, some being much longer than others. This appears from specimens in the Herbarium to be a much stouter plant than the following, the stem being thrice the size, and the catkin much larger.

* To understand the plants contained in this, and the following order, it is indispensable to have Mr. Francis's work on that subject. (An Analysis of the British Ferns, and their Allies, with copper-plate engravings of every species and variety, by G. W. Francis, London : Simpkin, Marshall, & Co., Stationers' Court.) He has treated his subject in a most masterly manner, and has derived assistance from all the most eminent botanists of the present day. The engravings, though small, are very characteristic. The list of localities for every species is very numerous, and there is an account of the virtues and the geographical range of the different species given. The price is extremely moderate, being only 4s. 6d., and no botanical library can be considered complete without it.

E. PALUSTRE, Linn. Marsh Horse-tail. June, July. 4

Crosby. *R. Tudor*. Near Crosby. *J. S. in Herb.* Ponds in Wirral. *H. C. Watson*.

VAR. γ . POLYSTACHION. *Francis*. (Upper branches elongated, and fruitful.)

Crosby Marsh. *J. S. in Herb.*

This is a very interesting variety, the specimens in the Herbarium at the Gardens differ from the plate in Francis's Ferns by having the usual terminal catkin; the cause is not, therefore, always to be attributed, as Mr. Francis states, to injury by frost, or to its being nipped by cattle.

E. SYLVATICUM, Linn. Branched Wood Horse-tail. April, May. 4

Lancashire. *Mr. Watson, in Francis*. Crosby. *R. Tudor*.
Cheshire. *Mr. Watson, in Francis*. Seacombe. *H. C. Watson*.

E. VARIEGATUM, Schleich. Variegated Rough Horse-tail. July, August. 4

Bootle. *Mr. W. Wilson, in Br. Fl.* Waterloo, near the round bathing house. Sandhills, between New Brighton, and Leasowe.

Mr. Murray, of the Botanic Gardens, informed me that he has collected specimens at New Brighton, near the Rock Fort, measuring between three and four feet in length. This plant assists, like the grasses, and other maritime plants, in binding together the sands of the sea shore.

ORDER XCIII. FILICES. The Fern Family.

(The following Genera belong to *Cryptogamia—Filices*.)

SUB-ORDER. LYCOPODINEÆ.**LYCOPODIUM, Linn.** Club-moss.**L. INUNDATUM, Linn.** Marsh Club-moss. June, July. 4

In a marshy spot, at the commencement of Bidston Heath, by the side of the road leading from North Birkenhead.

L. SELAGINOIDES, Linn. Lesser Alpine Club-moss. Aug. 4

On Seaforth Common, in moist places towards Rimrose Brook. In a moist meadow below Crosby. *J. S. in Herb.* (In moist places between New Brighton and Wallasey?) Heswall Hills. *Miss E. Potts*.

L. SELAGO, Linn. Fir Club-moss. June—Aug. 4

Very sparingly, by the side of Bidston Stone-quarry. (Probably concealed by the luxuriance of the other herbage.)

SUB-ORDER. FILICES VERÆ.

BOTRYCHIUM. Sw. Moonwort.

B. LUNARIA, Sw. Common Moonwort. June. 2

Seaforth Common, (only two to three inches high.) Bootle. Dr. Bostock, in With. Allerton, near Mr. Rutson's. J. S. in Herb. Cheshire, within half a mile of the Rock Fort. A. Murray. Among the sand-hills at New Brighton, in a grassy spot at the back of a stone-quarry, which is near the shore.

There is a remarkably large specimen, ten inches high, in the Herbarium at the Botanic Gardens, from "near Bootle Land-mark," which is the more extraordinary, as I have never seen specimens from that neighbourhood, more than three inches high, though it may be found rather more luxuriant at New Brighton. Mr. W. Wilson, in Cheshire, finds it with three stalks of fructification. It is liable, too, to vary in the form of its leaves. As it grows and fades so quickly, without leaving any trace behind, it was formerly believed, that during the increase of the moon it sprung up, and that with the waning of the moon it died. Hence the alchemists of the middle ages made use of it in their researches.

OPHIOGOSSUM. Linn. Adder's-tongue.

O. VULGATUM, Linn. Common Adder's-tongue. May. 2

Seaforth Common. (With *B. lunaria*, very small.) Near Crosby. J. S. in Herb. About Liverpool. Dr. Bostock, in With. The field on the right-hand side of the new Chester road, a short distance beyond Tranmere. H. C. Watson. Moist meadows, near Woodside. H. Shepherd. In a moist field, in which the path leading from Bidston Church terminates, rather luxuriant.

This is probably frequently overlooked in summer, by its being overtopped by the herbage, and resembling it in colour. It is not unfrequently found with two spikes.

OSMUNDA, Linn. Flowering Fern.

O. REGALIS, Linn. Common Osmund-royal. June, July. 2

Between Crosby and Formby. Dr. Bostock, in With. Frequent in the lanes about Litherland and Orrell. In a small thicket on the left-hand side of the road, about a quarter of a mile beyond Bebbington Church.

It is not uncommon to find specimens in which some of the lower leaflets are partially changed into fructification.

POLYPODIUM. *Linn.* Polypody.

P. VULGARE, *Linn.* Common Polypody. May—Oct. 2

In hedges on trunks of trees, and on tops of barns, &c., very common.

VAR. β . SERRATUM. Lobes distinctly, and often doubly serrated.

VAR. ϵ . ACUTUM. Lobes and fronds long, terminating in a sharp point.

In shady lanes in Wirral, but not common. In a lane at Holt Hill, crossed by the path leading to Oxtan.

BLECHNUM. *Linn.* Hard-fern.

B. BOREALE, *Sw.* Northern Hard-fern. July. 2

In shady hedge bottoms, and in woods and dry barren situations, common.

Mr. Wilson Armistead has specimens of a proliferous variety, gathered on Tranmere Heath.

ASPLENIUM. *Linn.* Spleenwort.

A. MARINUM, *Linn.* Sea Spleenwort. June—Oct. 2

In clefts of the rocks by the sea-shore, south of Liverpool, near the Dingle, abundant. Bootle (?) *Dr. Bostock, in With.* On the red and yellow Noses at New Brighton, very sparingly, and out of reach from the shore. Abundant on the rocks at Hilbre Island, very luxuriant and occasionally proliferous, and curiously lobed in an irregular manner.

This is found in some inland localities in Lancashire, as between Warrington and Winwick, in a stone-quarry close to the road; and in Francis's Ferns it is stated that "Lieut. Phillips, R.N., informed Mr. Watson, that he had found it at one of the small towns near Manchester, it is believed Ormskirk, which is far from the sea;" but surely there must be some error in this, as Ormskirk cannot be considered near Manchester.

A. RUTAMURARIA, *Linn.* Wall-rue Spleenwort. June—Oct. 2

Sefton. *R. Tudor.* On old walls, about Upper Tranmere, not common. On Bebbington Church, and on the porch.

A. ADIANTUM NIGRUM, *Linn.* Black-stalked Spleenwort. June—Oct. 2

Kirkby. *R. Tudor*. In shady lanes between Woodside and Oxtou, not uncommon. In lanes about Eastham, frequent.

A. FILIX FÆMINA, Bernh. Short-fruited Spleenwort. June, July. 2

In shady hedge bottoms, not unfrequent.

SCOLOPENDRIUM. Sm. Hart's-tongue.

S. VULGARE, Sym. Common Hart's-tongue. July. 2

Near Wavertree, and the Old Swan. *J. S. in Herb.* Walton. *R. Tudor*. In shady lanes between Woodside and Oxtou, not unfrequent.

VAR. γ. MULTIFIDUM. Frond much cleft at the top.

In shady lanes, occasionally with the preceding, but not common.

PTERIS. Linn. Brake.

P. AQUILINA, Linn. Common Brake. July. 2

In woods, and on heathy or moory places, very common.

ASPIDIUM. Sw. Shield-fern.

A. LOBATUM, Sw. Close-leaved Prickly Shield-fern. July. 2

In a hedge by the side of the footpath leading across the fields from Walton Church to Fazakarley, not uncommon.

A. ACULEATUM, Sw. Soft Prickly Shield-fern. July. 2

Walton. *J. S. in Herb.* In shady lanes between Woodside and Oxtou, but not common. In a lane leading to Heswall. *Miss E. Potts.* (sent as *angulare*.)

I think that the thanks of botanists are due to Mr. Francis, for extricating this species, and its near allies, from the confusion in which they hitherto appear to have been. With his descriptions, and plates, there is no difficulty in distinguishing this from the preceding; and in making *angulare*, a variety of *aculeatum*, he has done quite right, for few botanists can distinguish between them. The specimen I received from Miss E. Potts as *angulare*, from "near Parkgate," agrees with my specimens of *aculeatum*, which agree exactly with the description and figure of Mr. Francis. I have just the top part of a frond, from near Woodside, which would seem to be *angulare*, but not having the whole frond I am unable to determine.

A. OREOPTERIS, Sw. Heath Shield-fern. July. 2

Shady lanes about Netherton, but not common. *R. Tudor*.

A. FILIX MAS, *Sw.* Blunt Shield-fern. June, July. ♀

In hedges, woods, and shady places, very common.

A. DILATATUM, *Sm.* Sharp-toothed Shield-fern. July,
Aug. ♀

In hedges, woods, and shady places, very common.

In the British Flora this is made a variety of *spinulosum*, some states of which, I suppose, it closely resembles. Mr. Francis, however, has made separate species of them, and has well defined them as well as their varieties.

PILULARIA. *Linn.* Pill-wort.

P. GLOBULIFERA, *Linn.* Creeping Pill-wort. June, July. ♀

Childwall Common. *Dr. Bostock*, in *With.* By the side of a pond at Allerton, about one hundred yards from the Dog Kennels. *H. Shepherd.*

Very liable to be overlooked, on account of its situation and mode of growth.

ORDER XCVII. CHARACEÆ.* The Chara Family.

CHARA. *Vaill.* Chara. *Monandria—Monogynia.*

C. TRANSLUCENS, *Pers.* Translucent Chara. June, July. ☉

In some large ponds on the way to Allerton. *J. S. in Herb.*
In pits on Mr. Cleg's grounds at Allerton. *H. Shepherd.*

C. FLEXILIS, *Linn.* Flaccid Chara. April—Aug. ☉

In ponds, about Woodside and Bootle, not uncommon.

C. VULGARIS, *Linn.* Common Chara. July. ☉

In ponds, very common.

* This order, though not directly following the others, I have introduced, to give what scanty information I have been able to glean from an inspection of the specimens in the Herbarium at the Botanic Gardens. This neighbourhood would prove an excellent field for the study of this order, as all the clay-pits abound with the different species; the general objection by most botanists is, I believe, the difficulty of preserving them.

C. HEDGWIGH, Ag. Hedgwigian Chara. June. ☉

In ponds, about Woodside and Bootle, not uncommon.

Specimens of this Chara, from "clay pools, north shore," of Liverpool, are marked *C. nidifica?* in the Herbarium at the Botanic Gardens.

C. HISPIDA, Linn. Hispid Chara. July, Aug. ☉

Mock-beggar, (Leasowe.) *J. S. in Herb. Fazakarley. R. Tudor.*

INDEX.

In the Index I have prefixed the same signs to the plants which are used by the Edinburgh Botanical Society, who request that Botanists will adopt the same signs, in order to facilitate the comparison of different Floras. ** signifies very common; * less common, but of frequent occurrence; § abundant in one or two localities; † rare; ? doubtfully native; ‡ certainly introduced. In addition to the preceding signs, I have prefixed the ? after such plants as I do not like to include without further confirmation. Those plants which are inserted between brackets, are such as occur but very rarely, and under unquestionably suspicious circumstances. I consider it proper to mention them, but do not wish them to be taken as part of the spontaneous vegetation of the district; if however any of them should be found to become more abundant, they might be included with the Edinburgh sign ‡ prefixed.

INDEX.

	PAGE		PAGE
ACERACEÆ . . .	22	ALLIUM.	
ACER.		‡ursinum . . .	84
‡*Pseudo-platanus . . .	22	ALNUS.	
ACHILLÆA.		*glutiosa . . .	79
**Millefolium . . .	54	ALOPECURUS.	
**Ptarmica . . .	54	†agrestis . . .	96
ACINOS.		**geniculatus . . .	97
vulgaris ? . . .	67	**pratensis . . .	96
ADONIS.		AMARYLLIDACEÆ . . .	83
†autumnalis . . .	2	AMENTACEÆ . . .	78
ADOXA.		AMMOPHILA.	
*moschatellina . . .	46	*arundinacea . . .	99
ÆGOPODIUM.		ANAGALLIS.	
†Podagraria . . .	41	**arvensis . . .	71
ÆTHUSA.		*cærulea . . .	71
*Cynapium . . .	43	*tenella . . .	71
AGRIMONIA.		ANCHUSA.	
*Eupatoria . . .	34	†sempervirens . . .	62
AGROSTEMMA.		ANEMONE.	
*Githago . . .	18	(apennina) . . .	2
AGROSTIS.		*nemorosa . . .	1
**alba . . .	98	ANGELICA.	
*stolonifera . . .	98	**sylvestris . . .	43
**canina . . .	98	ANTHOXANTHUM.	
**vulgaris . . .	98	**odoratum . . .	97
AIRA.		ANTHRISCUS.	
**cæspitosa . . .	99	**sylvestris . . .	45
**caryophyllea . . .	99	*vulgaris . . .	45
*flexuosa . . .	99	ANTHYLLIS.	
**præcox . . .	99	*vulneraria . . .	27
AJUGA.		APARGIA.	
**reptans . . .	69	**autumnalis . . .	51
ALCHENILLA.		APIUM.	
*arvensis . . .	35	*graveolens . . .	41
*vulgaris . . .	35	APOCYNACEÆ . . .	58
ALISMA.		AQUILEGIA.	
**Plantago . . .	86	(vulgaris) . . .	5
*ranunculoides . . .	86	ARABIS.	
ALISMACEÆ.		*hirsuta . . .	8

	PAGE		PAGE
ARALIACEÆ . . .	46	BARTSIA.	
ARCTIUM.		**Odontites . . .	65
**Lappa . . .	49	*viscosa . . .	65
*β. <i>Bardana</i> . . .	50	BELLIS.	
ARENARIA.		**perennis . . .	54
*marina . . .	20	BETONICA.	
*peplodes . . .	19	*officinalis . . .	69
*rubra . . .	20	BETULA.	
*serpyllifolia . . .	19	*alba . . .	79
*trinervis . . .	19	BIDENS.	
AROIDEÆ . . .	87	*cernua . . .	54
ARRHENATHERUM.		*tripartita . . .	54
**avenaceum . . .	100	BLECHNUM.	
ARTEMISIA.		**boreale . . .	112
†Absinthium . . .	55	BLYSNUS.	
*maritima . . .	55	compressus? . . .	92
**vulgaris . . .	55	§rufus . . .	92
ARUM.		BORAGINACEÆ. . .	61
*maculatum . . .	87	BOTRYCHIUM.	
ARUNDO.		*Lunaria . . .	111
*Phragmites . . .	99	BRACHYPODIUM.	
ASPARAGUS.		**sylvaticum . . .	105
†officinalis . . .	83	BRASSICA.	
ASPERULA.		?*campestris . . .	12
*odorata . . .	47	*monensis . . .	12
ASPHODELIACEÆ . . .	83	?*Napus . . .	12
ASPIDIUM.		?*Rapa . . .	12
*aculeatum . . .	113	BRIZA.	
**dilatum . . .	114	**media . . .	102
*Filix-mas . . .	114	BROMUS.	
*lobatum . . .	113	*asper . . .	104
†oreopteris . . .	113	§triflorus . . .	104
ASPLENIUM.		**mollis . . .	104
*Adiantum-nigrum . . .	112	†racemosus . . .	104
*Filix-fœmina . . .	113	†secalimus . . .	104
§marinum . . .	112	**sterilis . . .	104
*Ruta-muraria . . .	112	BUNIUM.	
ASTER.		**flexuosum . . .	41
*Tripolium . . .	53	BUTOMUS.	
ATRIPLEX.		*umbellatus . . .	87
*angustifolia . . .	74	CAKILE.	
*littoralis . . .	74	*maritima . . .	10
**patula . . .	74	CALAMAGROSTIS.	
*portulacoides . . .	74	*Epigejos . . .	98
AVENA.		CALAMINTHA.	
*pubescens . . .	100	†officinalis . . .	67
††strigosa . . .	100	CALLITRICHE.	
BALLOTA.		†autumnalis . . .	38
**nigra . . .	69	**verna . . .	38
BARBAREA.		CALLUNA.	
**vulgaris . . .	8	*vulgaris . . .	58
		CALTHA.	

	PAGE		PAGE
**palustris	5	*viscosum	20
CAMPANULA.		*vulgatum	20
latifolia ?	57	CHARA.	
**rotundifolia	57	*flexilis	114
CAMPANULACEÆ	57	*Hedgwigii	115
CAPRIFOLIACEÆ	46	§hispidula	115
CAPSELLA.		†translucens	114
**Bursa-pastoris	11	**vulgaris	114
CARDAMINE.		CHARACEÆ	114
*amara	8	CHELIDONIUM.	
**hirsuta	8	§majus	7
**pratensis	8	CHENOPODIACEÆ	73
CARDUUS.		CHENOPODIUM.	
§tenuiflorus	50	**album	73
CAREX.		*Bonus-Henricus	73
*ampullacea	96	*maritimum	73
*arenaria	93	*murale	73
**cæspitosa	95	(olidum)	73
†distans	95	*rubrum	73
*extensa	94	CHLORA.	
**hirta	96	*perfoliata	59
intermedia ?		CHRYSANTHEMUM.	
*œderi	94	**Leucanthemum	55
**ovalis	94	*segetum	55
**panicea	95	CHRYSOPLERIUM.	
*paniculata	93	*oppositifolium	40
*pilulifera	95	CICHORIUM.	
**præcox	95	†Intybus	51
**Pseudo-cyperus	94	CIRCÆA.	
pulcaris ?	96	†Lutetiana	37
**recurva	95	CLINOPODIUM.	
*remota	94	*vulgare	68
*riparia	95	CNICUS.	
§ or *stellulata	94	**arvensis	50
† stricta	95	**lanceolatus	50
†strigosa	94	**palustris	50
*sylvatica	94	COCHLEARIA.	
*vulpina	93	anglica ?	10
CARLINA.		(Armoracia)	10
*vulgaris	50	†Danica	10
CARUM.		*officinalis	9
Carui ?	44	COMARUM.	
CARYOPHYLLÆ	16	*palustre	34
CATABROSA.		COMPOSITEÆ	49
§aquatica	102	CONIFERÆ	79
CENTAUREA.		CONIUM.	
**nigra	49	*maculatum	45
Scabiosa ?	49	CONVALLARIA.	
CERASTIUM.		†majalis	83
*semidecandrum	20	CONVOLVULACEÆ	61
*tetrandrum	20	CONVOLVULUS.	

	PAGE		PAGE
*arvensis	61	*cæspitosa	91
§sepium	61	*fluitans	91
†soldanella	61	**palustris	91
CORONOPUS.		§pauciflora	91
(didyma)	11	EPILOBIUM.	
**Ruëllii	11	*hirsutum	36
CORYDALIS.		*montanum	36
§claviculata	7	*palustre	36
CORYLUS.		**parviflorum	36
**Avellana	79	EPIPACTIS.	
COTYLEDON.		†latifolia	82
*Umbilicus	39	†palustris	82
CRASSULACEÆ	39	EQUISETACEÆ	109
CRATÆGUS.		EQUISETUM.	
**Oxyacantha	35	*arvense	109
CREPIS.		§fluviatile	109
**tectorum	52	**limosum	109
CROCUS.		**palustre	110
nudiflorus?		†sylvaticum	110
CRUCIFERACEÆ	7	§variegatum	110
CYNOGLOSSUM.		ERICA.	
*officinale	63	*cinerea	58
CYNOSURUS.		*Tetralix	57
**cristatus	102	ERICACEÆ	57
CYPERACEÆ	91	ERIGERON.	
CYTISUS.		*acris	54
*Scoparius	26	(Canadensis)	54
DACTYLIS.		ERIOPHORUM.	
**glomerata	102	§angustifolium	93
DAUCUS.		§polystachion	93
**Carota	44	§vaginatum	93
maritimus?	44	ERODIUM.	
*DIANTHUS.		*cicutarium	24
†Armeria	16	†maritimum	24
†deltoides	16	ERVUM.	
DIGITALIS.		*hirsutum	31
*purpurea	64	§tetraspermum	31
DIPSACEÆ	48	ERYNGIUM.	
DIPSACUS.		*maritimum	41
*sylvestris	49	ERYSIMUM.	
DRABA.		**Alliaria	11
**verna	9	ERYTHRÆA.	
DROSERÆ.		*Centaurium	60
†anglica	15	†latifolia	61
§longifolia	15	§littoralis	61
§rotundifolia	15	§pulchella	60
DROSERACEÆ	15	EUPATORIUM.	
ECHIUM.		*cannabinum	53
†vulgare	61	EUPHORBIA.	
ELEOCHARIS.		**exigua	76
acicularis?	91	*helioscopia	76

	PAGE		PAGE
†paralia	76	†columbinum	23
*Peplus	76	*dissectum	23
§portlandica	76	**molle	23
EUPHORBIACEÆ	76	phæum?	23
EUPHRASIA.		†pratense	23
**officinalis	65	**robertianum	23
FAGUS.		*sanguineum	23
?sylvatica	79	GEUM.	
FEDIA.		§rivale	32
§dentata	48	*urbanum	32
*olitoria	48	GLAUCIUM.	
FESTUCA.		†luteum	7
**bromoides	103	GLAUX.	
**duriuscula	103	*maritima	71
†elator	103	GIECHOMA.	
*loliacea	103	**hederacea	68
*ovina	102	GNAPHALIUM.	
†e. viripara	103	§germanicum	56
*pratensis	103	(luteo-album)	56
*rubra	103	*minimum	56
*uniglumis	103	**uliginosum	56
FILICES	110	GRAMINACEÆ	96
FENICULUM.		GROSSULARACEÆ	39
(vulgare)	44	HABERNARIA.	
FRAGARIA.		§bifolia	82
*vesca	33	HALORAGACEÆ	37
FRAXINUS.		HEDERA.	
*excelsior		**Helix	46
FUMARIA.		HELMINTHIA.	
§scapeolata	7	§echioides	51
**officinalis	7	HELOSCIADIUM.	
FUMARIACEÆ	7	*inundatum	41
GALEOPSIS		**nodiflorum	41
§Ladanum	69	HERACLEUM.	
**Tetrahit	69	**spondylium	44
*versicolor	69	HESPERIS.	
GALIUM.		(inodora)	11
**aparine	48	HIERACIUM.	
*cruciatum	47	**Pilosella	52
**saxatile	48	*sabaudum	52
*verum	47	§sylvaticum	52
**uliginosum	48	§umbellatum	52
GENISTA.		HIPPURIS.	
*anglica	26	*vulgaris	37
**tinctoria	26	HOLCUS.	
GENTIANA.		**lanatus	97
§amarilla	60	**mollis	97
*campestris	60	HORDEUM.	
§Pneumonanthe	60	*murinum	105
GENTIANACEÆ	59	*pratense	105
GERANIACEÆ	23	HOTTONIA.	
GERANIUM.		§palustris	70

	PAGE		PAGE
HUMULUS.		*incisum	68
*Lupulus	77	(maculatum)	68
HYACINTHUS.		**purpureum	68
**non-scriptus	84	LAPSANA.	
HYDROCHARACEÆ	81	**communis	50
HYDROCHARIS.		LATHYRUS.	
§Morsus-Ranæ	81	**pratensis	31
HYDROCOTYLE.		LEGUMINOSÆ	25
**vulgaris	40	LEMNA.	
HYOSCYAMUS.		**minor	88
§niger	63	§polyrhiza	88
HYPERICACEÆ	21	**trisulca	88
HYPERICUM.		LENTIBULACEÆ	70
§Androsæmum	21	LEONTODON.	
†calycinum	22	§palustre	52
§elodes	22	**Taraxacum	52
*humifusum	22	LEPIDIUM.	
*perforatum	22	**campestre	12
*pulchrum	22	†latifolium	12
*quadrangulum	21	LIGUSTRUM.	
HYPOCHÆRIS.		*vulgare	58
**radicata	51	LIMOSELLA.	
ILEX.		†aquatica	64
**aquifolium	58	LINARIA.	
ILLECEBRACEÆ	38	(Elatine)	64
ILICINACEÆ	58	*vulgaris	64
IRIDACEÆ	82	LINACEÆ	24
IRIS.		LINUM.	
*pseudo-acorus	83	*angustifolium	24
JASIONE.		**catharticum	25
**montana	57	(perenne)	25
JASMINACEÆ	58	LISTERA.	
JUNCACEÆ	84	§ovata	82
JUNCUS.		LITHOSPERMUM.	
**bufonius	85	§arvense	62
†compressus	85	§officinale	62
*β. canosus	85	LITTORELLA.	
*conglomeratus	85	§lacustris	72
**effusus	85	LOLIUM.	
**glaucus	84	**perenne	104
**lampocarpus	85	§temulentum	104
*maritimus	85	LONICERA.	
*squarrosus	85	*Caprifolium	47
*uliginosus	85	††Periclymenum	47
*subverticillatus	85	††xylosteum	47
KNAUTIA.		LORANTHACEÆ	46
*arvensis	49	LOTUS.	
LABIATÆ	66	**corniculatus	29
LAMIUM.		*major	29
*album	68	†tenuis	29
*amplexicaule	68	LUZULA.	
		**campestris	86

	PAGE		PAGE
§ <i>β. conjesta</i>	86	MILIMUM.	
* <i>pilosa</i>	86	§ <i>effusum</i>	97
* <i>sylvatica</i>	86	MÆNCHIA.	
LYCHNIS.		§ <i>erecta</i>	18
** <i>dioica</i>	17	MONTIA.	
* <i>a. diurna</i>	17	* <i>fontana</i>	38
* <i>β. vespertina</i>	17	MYOSOTIS.	
* <i>Flos-cuculi</i>	17	** <i>arvensis</i>	62
LYCOPodium.		* <i>collina</i>	62
† <i>inundatum</i>	110	* <i>palustris</i>	62
§ <i>selaginoides</i>	110	* <i>versicolor</i>	63
† <i>Selago</i>	110	MYRICA.	
LYCOPSIS.		§ <i>Gale</i>	79
* <i>arvensis</i>	62	MYRIOPHYLLUM.	
LYCOPUS.		* <i>spicatum</i>	37
* <i>europæus</i>	67	§ <i>verticillatum</i>	37
LYSIMACHIA.		NARCISSUS.	
* <i>nemorum</i>	70	† <i>Pseudo-Narcissus</i>	83
† <i>nummularia</i>	71	NARDUS.	
* <i>vulgaris</i>	70	* <i>stricta</i>	105
LYTHRACEÆ	38	NARTHECIUM.	
LYTHRUM.		§ <i>ossifragum</i>	84
* <i>Salicaria</i>	38	NASTURTium.	
MALVA.		† <i>amphibium</i>	8
§ <i>moschata</i>	21	* <i>officinale</i>	8
* <i>rotundifolia</i>	21	§ <i>terrestre</i>	8
* <i>sylvestris</i>	21	NEOTTIA.	
MALVACEÆ	20	§ <i>spiralis</i>	82
MARRUBIUM.		NUPHAR.	
† <i>vulgare</i>	69	† <i>lutea</i>	5
MATRICARIA.		NYPHÆA.	
* <i>Chamomilla</i>	55	** <i>alba</i>	5
MEDICAGO.		NYPHÆACEÆ	5
* <i>lupulina</i>	27	CENANTHE.	
‡ <i>sativa</i>	27	** <i>crocata</i>	42
MELAMPYRUM.		** <i>fistulosa</i>	42
* <i>pratense</i>	64	† <i>Phellandrium</i>	43
MELICA.		§ <i>pimpinelloides</i>	42
* <i>cærulea</i>	102	CENOTHERA.	
§ <i>uniflora</i>	102	§ <i>biennis</i>	37
MELILOTUS.		ONAGRACEÆ	36
‡ <i>leucantha?</i>	27	ONONIS.	
§ <i>officinalis</i>	27	* <i>arvensis</i>	26
MENTHA.		* <i>repens</i>	26
§ <i>arvensis</i>	67	* <i>spinosa</i>	27
** <i>hirsuta</i>	67	ONOPORDUM.	
† <i>piperita</i>	67	† <i>Acanthium</i>	50
§ <i>rubra</i>	67	OPIHOGLOSSUM.	
MENYANTHES.		* <i>vulgatum</i>	111
* <i>trifoliata</i>	59	ORCHIDACEÆ	81
MERCURIALIS.		ORCHIS.	
* <i>perennis</i>	76		

	PAGE
latifolia	81
*maculata	81
*mascula	81
**morio	81
pyramidalis?	82
ORIGANUM.	
†vulgare	67
ORNITHOPTIS.	
*perpusillus	29
OROBANCHE.	
†major	64
OROBANCHACEÆ	63
OROBUS.	
*tuberosus	31
OSMUNDA.	
§regalis	111
OXALIDACEÆ	25
OXALIS.	
*acetosella	25
PAPAVERACEÆ	6
PAPAYER.	
*Argemone	6
*dubium	6
*Rheas	6
PARIETARIA.	
†officinalis	77
PARNASSIA.	
*palustris	15
PASTINACA.	
§sativa	43
PEDICULARIS.	
*palustris	65
*sylvatica	65
PEPLIS.	
§Portula	38
PETASITES.	
§vulgaris	53
PHALARIS.	
*arundinacea	97
(canariensis)	97
PHLEUM.	
*arenarium	97
*pratense	97
PILULARIA.	
†globulifera	114
PIMPINELLA.	
§magna	42
*saxifraga	42
PINGUICULA.	
vulgaris?	70
PINUS.	
‡*sylvestris	80

	PAGE
PLANTAGINACEÆ	72
PLANTAGO.	
*Coronopus	72
**lanceolata	72
**major	72
*maritima	72
PLUMBAGINACEÆ	72
POA.	
**annua	101
aquatica?	101
*distans	101
**fluitans	100
§maritima	100
**pratensis	101
§γ. subcærulea?	101
§procumbens	101
§rigida	101
**trivialis	101
POLYGALA.	
**vulgaris	16
POLYGALACEÆ	15
POLYGONACEÆ	74
POLYGONUM.	
§amphibium	75
*β. terrestre	75
**aviculare	75
†Bistorta	75
**convolvulus	75
**Hydropiper	75
*lapathifolium	75
§maritimum	75
*Persicaria	75
POLYPODIUM.	
**vulgare	112
POPULUS.	
‡*alba	78
‡*nigra	78
PORTULACEÆ	38
POTAMACEÆ	88
POTAMOGETON.	
*crispus	89
§gramineus	89
†heterophyllus	90
**natans	90
*pectinatus	89
§perfoliatus	90
**pusillus	89
POTENTILLA.	
**anserina	34
**Fragariastrum	34
**reptans	34

	PAGE		PAGE
PRIMULA.		RHINANTHUS.	
†veris	71	**Crista-Galli	65
**vulgaris	71	RHYNOSPORA.	
PRIMULACEÆ	70	*alba	91
PRUNELLA.		RIBES.	
**vulgaris	68	?Grossularia	40
PRUNUS.		ROSA.	
†Cerasus	32	*arvensis	35
*domestica	31	*canina	35
*institia	31	*spinossissima	35
?padus	32	tomentosa ?	35
**spinosa	31	ROSACEÆ	31
PTERIS.		ROTHOLLIA.	
**aquilina	113	§incurvata	106
PULICARIA.		RUBIACEÆ	47
*dysenterica	54	RUBUS.	
PYRETHRUM.		†carpinifolius	33
*inodorum	55	*cæsius	33
†maritimum	55	*corylifolius	33
(Parthenium)	55	*fruticosus	33
PYRUS.		†idaeus	32
§aucuparia	36	†nitidus	33
*malus	36	RUMEX.	
†terminalis	36	**acetosa	74
QUERCUS.		**Acetosella	75
*Robur	79	*acutus	74
RADIOLA.		**crispus	74
*millegrana	25	§Hydrolapathum	74
RANUNCULACEÆ	1	maritimus ?	75
RANUNCULUS.		**obtusifolius	74
**acris	3	RUPPIA.	
**aquatilis	2	*maritima	90
§arvensis	4	SAGINA.	
†auricomus	3	§maritima	18
**bulbosus	4	**procumbens	18
§cæspitosus	2	SAGITTARIA.	
**Ficaria	3	sagittifolia ?	87
**Flammula	3	SALICORNIA.	
*β. reptans	3	*herbacea	73
**hederaceus	2	SALIX.	
§hirsutus	4	*capræa	78
§Lingua	2	*fragilis	78
parviflorus ?	4	*fusca	78
**repens	3	*argentea	78
**sceleratus	3	*viminalis	78
RAPHANUS.		SALSOLA.	
*Raphanistrum	13	*Kali	73
RESEDA.		SAMBUCUS.	
†fruticulosa	13	§Ebulus	46
*Luteola	13	*†nigra	47
RESEDACEÆ	13	SAMOLUS.	

	PAGE		PAGE
§ Valerandi	71	* inflata	16
SANICULA.		§ maritima	16
* Europæa	40	nutans ?	17
SAPONARIA.		† quinquevulnera	17
? officinalis	16	SINAPIS.	
SAXIFRAGA.		* alba	13
granulata ?	40	** arvensis	13
* tridactylites	40	** nigra	13
SAXIFRAGACEÆ	40	SISYMBRIUM.	
SCABIOSA.		** officinale	10
* succisa	49	* Sophia	10
SCANDIX.		** Thalianum	11
* Pecten-veneris	45	Sium.	
SCIRPUS.		* angustifolium	42
* lacustris	92	SMILACEÆ	83
* maritimus	92	SMYRNIUM.	
§ setaceus	92	§ olusatrum	45
SCLERANTHUS.		SOLANACEÆ	63
* annuus	39	SOLANUM.	
SCOLOPENDRIUM.		* Dulcamara	63
* vulgare	113	* nigrum	63
SCROPHULARIA.		SOLIDAGO.	
* aquatica	64	* Virgaurea	53
* nodosa	64	SONCHUS.	
SCROPHULARACEÆ	64	* arvensis	52
SCUTELLARIA.		** oleraceus	52
* galericulata	68	SPARGANIUM.	
† minor	68	§ natans	88
SEDUM.		** ramosum	88
** acre	39	* simplex	88
anglicum ?	39	SPERGULA.	
§ reflexum	39	** arvensis	18
* Telephium	39	§ β. pentandra	18
villosum ?	39	* nodosa	18
SEMPERVIVUM.		SPIRÆA.	
* tectorum	39	* ulmaria	32
SENECIO.		STACHYS.	
* aquaticus	56	* arvensis	69
** Jacobæa	56	** palustris	69
paludosus ?	57	** sylvatica	69
saracenicus ?	57	STATICE.	
* sylvaticus	56	* Armeria	72
* tenuifolius	56	* Limonium	72
** vulgaris	56	spatulata ?	72
SERRATULA.		STELLARIA.	
§ tinctoria	49	* graminea	19
SHERARDIA.		** holostea	19
* arvensis	47	** media	19
SILVUS.		* uliginosa	19
§ pratensis	43	STRATIOTES.	
SILENE.		† aloides	81
§ anglica	17	SYMPHYTUM.	

	PAGE		PAGE
§officinale	62	†europæus	5
TAMACEÆ	83	TUSSILAGO.	
TAMUS.		**Farfara	53
**communis	83	TYPIA.	
TANACETUM.		**angustifolia	88
§vulgare	55	**latifolia	88
TAXUS.		minor?	88
†baccata	79	ULEX.	
TEESDALIA.		**Europæus	25
*nudicaulis	10	§nanus	26
TEUCRIUM.		ULMUS.	
**Scorodonia	69	†campestris	77
THALICTRUM.		†montana	77
§flavum	1	†suberosa	77
§minus	1	UMBELLIFERÆ	40
THLASPI.		URTICA.	
†arvense	10	**dioica	77
THIRINCIA.		†pilulifera	77
*hirta	51	**urens	77
THYMUS.		URTICACEÆ	76
*serpyllum	67	UTRICULARIA.	
TORILIS.		§minor	70
**anthriscus	44	*vulgaris	70
*infesta	44	VACCINIUM.	
*nodosa	44	§Myrtillus	58
TORMENTILLA.		§Vitis Idæa	58
*officinalis	34	VALERIANA.	
reptans?	34	*dioica	48
TRAGOPOGON.		*officinalis	48
*pratensis	51	VALERIANACEÆ	48
TRIFOLIUM.		VERBASCUM.	
*arvense	28	§Thapsus	63
**filiforme	29	VERBENA.	
*fragiferum	28	§officinalis	70
**medium	28	VERBENACEÆ	70
†ornithopodioides	28	VERONICA.	
**pratense	28	*agrestis	66
**procumbens	29	*anagallis	66
**repens	28	*arvensis	66
†scabrum	28	**Beccabunga	66
striatum?	29	**Chamædrys	66
†subterraneum	28	**hederifolia	66
TRIGLOCHIN.		*montana	66
*maritimum	87	*officinalis	66
*palustre	87	§scutellata	65
TRIODIA.		**serpyllifolia	65
*decumbens	100	VIBURNUM.	
TRITICUM.		*opulus	47
*junceum	105	VICIA.	
*repens	104	*angustifolia	30
TROILIUS.			

**Cracca	30	palustris?	14
*lathyroides	30	**tricolor	14
*sativa	30	a.Curtisii?	14
*sepium	30	**β. arvensis	14
VINCA.		VIOLACEÆ	13
?§minor	58	VISCUM.	
VIOLA.		§album	46
**canina	14	ZANNICHELLIA.	
flavicornis?	14	*palustris	90
†hirta	14	ZOSTERA.	
†odorata	13	§marina	91

APPENDIX.

METEOROLOGICAL TABLES & OBSERVATIONS

FOR THE YEAR 1838,

BY WILSON ARMISTEAD.

1870

THE NEW YORK PUBLIC LIBRARY

ASTOR LENOX TILDEN FOUNDATION

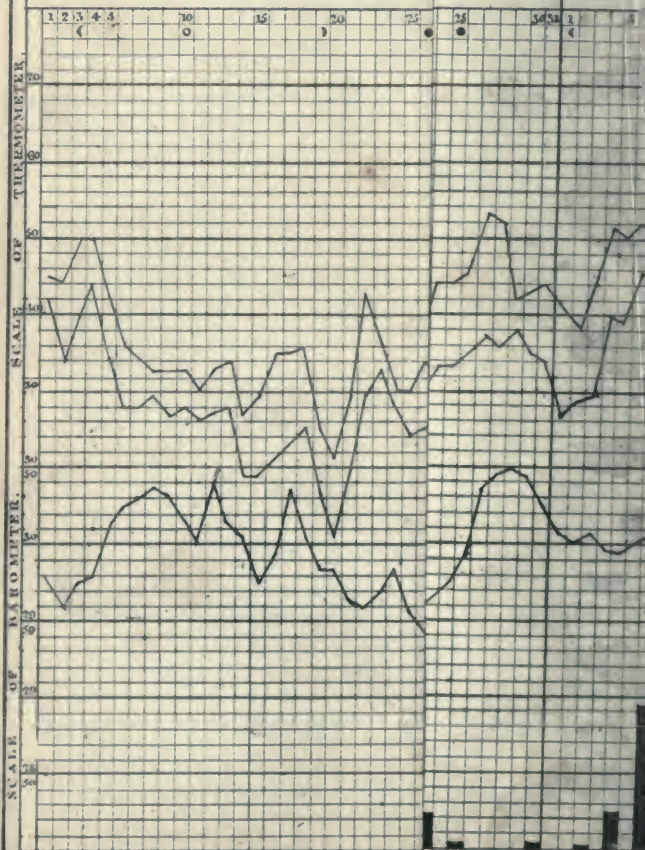
500 MADISON AVENUE

ces & Desc

L AMOUNT

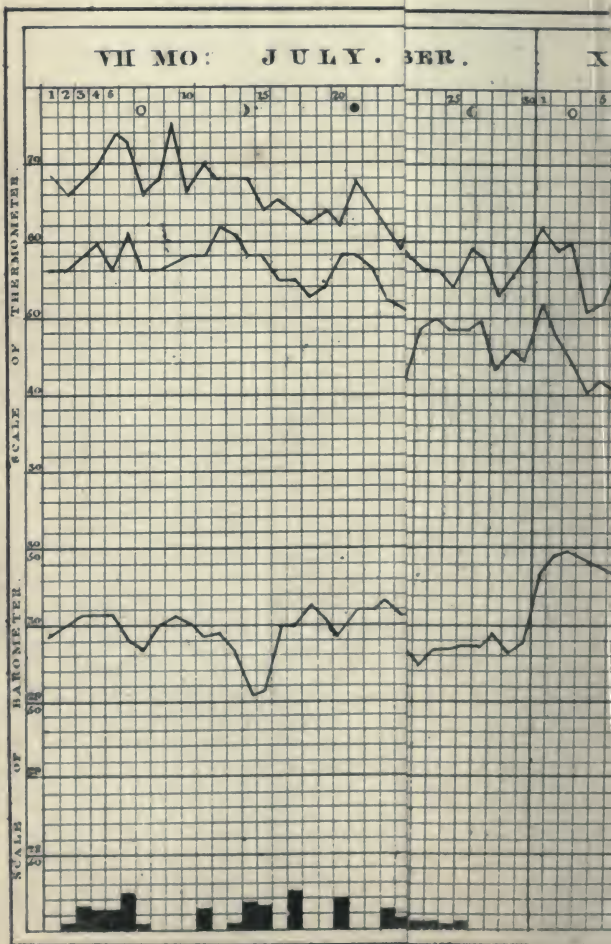
Woodside

LMO: JANUARY.





S & Drill
 AMOUNT
at Woodside



APPENDIX.

METEOROLOGICAL OBSERVATIONS.

INTRODUCTORY REMARKS.

THE variations in the time and manner in which meteorological observations are generally made, render it necessary, before introducing the following tables and remarks respecting the state of the weather, to give some explanation of the peculiarities of the arrangement, and the times at which the different notations have been made. If all meteorologists made their observations at the same hours, and in the same manner, the results obtained would not only be much more valuable, but the more easily compared with each other.

The direction or course of the wind is ascertained by various observations during the day, with the assistance of a vane, placed at a considerable elevation, when practicable. The force of the wind is

marked as follows: 0 denotes a calm; 1 a gentle breeze; 2 a little stronger; 3 a brisk wind, and 4 boisterous winds or hurricanes. The temperatures in the shade are ascertained by two self-registering thermometers (Fahrenheit,) placed against a wall about seven feet from the ground, and having an easterly aspect; and the power of the sun's rays by a similar instrument, with the bulb blackened, placed against a wall having a westerly aspect. The barometer is hung in the house, in such a situation as to be easily observed, and the notations are deduced from several observations made during the day.

The amount of rain is ascertained by a very simple gauge, pretty much of my own construction and contrivance, and which I believe to be as correct as a more complex or expensive one. It is placed on the ground in as eligible a situation as I can find, and is read off a little after 8 a. m. If there is not space for remarks respecting the weather in the column allotted for that purpose, they are continued after the table. The results and monthly means will be observed in the last column at the right hand of the table.

As the observations during the first and second months were not regularly noted down, I have occasionally had to make a few extracts from a journal published in Liverpool; but as this has been resorted to in a very few instances only, I shall trust to the liberality of the reader in overlooking it, as also any slight mistakes which it is not improbable may have arisen from the number of times which the tables have been copied. I may here also remark that the instruments I have made use of are of the very best construction, and I feel perfectly assured of their correctness and accuracy, having had them frequently tested whilst making the observations.

The daily fall of snow or rain was not registered in the first month, and the power of the sun's rays was not observed before the commencement of the fifth month.

FIRST MONTH, (JANUARY) 1838.

Date.	WIND.		THERMOMETER.				BAROMETER.			Rain.	WEATHER.	RESULTS.
	Course.	Force.	Max.	Min.	Mean.	Sun's Rays.	Max.	Min.	Mean.			
1	SW	1	45.	42.	43.50	—	29.90	29.70	29.80	—	Cloudy; rain a.m.	BAROMETER. Max. 12th....30.48 Min. 27th....29.28 Total Mean ..29.87
2	SSE	0	44.	34.	39.	—	29.72	29.50	29.61	—	Rain about noon; cloudy.	
3	S	3	50.	40.	45.	—	29.80	29.66	29.73	—	Fine; cloudy p.m.	
4	S	2	50.	44.	47.	—	30.02	29.56	29.79	—	Dull a.m.; clear p.m.	THERMOMETER Shade. Max. 3d & 4th. 50. Min. 20th....11. Total Mean ..31.47
5	SE	2	42.	34.	38.	—	30.20	30.12	30.16	—	Beautiful fine clear day.	
6	SE	1	36.	28.	32.	—	30.32	30.20	30.26	—	Cloudy and dull; foggy p.m.	
7	SSE	2	34.	28.	31.	—	30.35	30.25	30.30	—	Fine day; dull evening.	BAROMETER. Max. 12th....30.48 Min. 27th....29.28 Total Mean ..29.87
8	SSE	1	33.	29.	31.	—	30.40	30.26	30.38	—	Do.	
9	NE	0	33.	27.	30.	—	30.34	30.32	30.33	—	Very cold and frosty.	
10	C	0	33.	28.	30.50	—	30.20	30.16	30.18	—	Fine day; snow showers.	THERMOMETER Shade. Max. 3d & 4th. 50. Min. 20th....11. Total Mean ..31.47
11	N	1	30.50	26.	28.25	—	30.00	30.00	30.00	—	Clear a.m.; very cold and frosty.	
12	E	0	33.	27.	30.	—	30.48	30.36	30.42	—	Fine day; frosty still.	
13	ESE	0	34.	28.	31.	—	30.18	30.06	30.12	—	Snowy a.m.; cold and frosty.	BAROMETER. Max. 12th....30.48 Min. 27th....29.28 Total Mean ..29.87
14	ESE	1	27.	19.	23.	—	30.05	30.05	30.05	—	Fine day; very cold.	
15	ESE	1	30.	19.	24.50	—	29.76	29.72	29.74	—	Do.	
16	SE	0	35.	21.	28.	—	30.00	29.92	29.96	—	Do.	THERMOMETER Shade. Max. 3d & 4th. 50. Min. 20th....11. Total Mean ..31.47
17	NE	2	35.	23.	29.	—	30.40	30.32	30.36	—	Dull; very cold and frosty.	
18	SSE	1	36.	25.	28.	—	30.09	30.01	30.05	—	Fine day; intense frost.	
19	C	0	26.	16.	21.	—	29.90	29.86	29.88	—	Slight shower of snow p.m.	BAROMETER. Max. 12th....30.48 Min. 27th....29.28 Total Mean ..29.87
20	C	1	21.	11.	16.	—	29.89	29.83	29.86	—	Extremely cold and frosty.	
21	SSE	3	30.	20.	25.	—	29.66	29.64	29.65	—	Very cold; stormy.	
22	SE	4	43.	29.	36.	—	29.58	29.58	29.58	—	Cloudy and much milder.	THERMOMETER Shade. Max. 3d & 4th. 50. Min. 20th....11. Total Mean ..31.47
23	E	1	36.	33.	34.50	—	29.80	29.60	29.70	—	Do. and dull day.	
24	E	1	30.	28.	29.	—	29.88	29.80	29.84	—	Cold, dull and frosty.	
25	E	1	30.	24.	27.	—	29.56	29.52	29.54	—	Do.	BAROMETER. Max. 12th....30.48 Min. 27th....29.28 Total Mean ..29.87
26	ESE	2	34.	25.	29.50	—	29.40	29.40	29.40	—	Fair; rain in night.	
27	SE	1	31.	26.	33.50	—	29.34	29.28	29.31	—	Fine day; cold and frosty.	
28	SSE	0	34.	30.	32.	—	29.40	29.40	29.40	—	Do.	THERMOMETER Shade. Max. 3d & 4th. 50. Min. 20th....11. Total Mean ..31.47
29	SE	1	30.	28.	33.50	—	29.34	29.32	29.33	—	Dense fog p.m.	
30	C	1	42.	33.	37.50	—	29.62	29.53	29.60	—	Very cloudy and dull.	
31	SE	0	37.	28.	32.50	—	29.86	29.78	29.82	—	Cloudy, dull, cold and frosty.	Prevailing Wind. S.E.

OBSERVATIONS.

1. Very fine afternoon. 6. Sharp frost all day. 7. Very cold and frosty. 8. Very cold and frosty. 9. A little snow in the night, and occasionally during the day. 10. Wind N. and N.E. Fine halo discoides about half past eight, p. m. River phosphorescent. 11. Very clear night; several shooting stars about half past ten, and slight appearance of Aurora Borealis. 12. Fine day, slight shower of snow about noon. 14. Frost much increased. 15. Very keen frost. 16. A partial thaw about noon, but the frost set in again towards evening, and was very severe during the night. All the pools in this neighbourhood are completely solidified, and skating is a universal amusement. Large quantities of ice are floating down the river. 19. The cold and frost are very severe. Wind varied from S.E. to S.S.E. 20. Frost very intense. Many flocks of wild swans and other waterfowl have been observed here, which do not usually visit us, probably driven from more northern latitudes by the severity of the weather. 21. Milder, but still very cold and frosty. Rain about four, p. m., which was frozen as it fell on the ground, making it very slippery. The river is covered with large masses of floating ice, which cuts up the paddles of the steamers very much. Should the frost continue much longer we shall be entirely blocked up. The steamboats of one of the ferries have been prevented plying. 22. Dull day, and much milder; thawing rapidly. Frost in the night. 23. Thaw continues. 24. Frosty again. 25. Frosty; a little snow p. m. 26. Dull and frosty; a little snow in the night. 27. Very fine clear night; slight appearance of Aurora; river a little phosphorescent. 29. Snow in the night, and a little a. m. About ten p. m. a thaw commenced which continued all day. 30. Thaw again; very much milder, but frosty in the night. 31. A beautiful halo about ten, p. m. The quantity of ice in the river is very much diminished; some pieces are of considerable dimensions, and have probably floated from the upper part of the river, where an ice-boat has been employed to keep open a passage in the middle "drawn by from fourteen to sixteen horses."

SECOND MONTH, (FEBRUARY) 1836.

Date.	WIND.		THERMOMETER.				BAROMETER.			Rain.	WEATHER.	RESULTS.
	Course.	Force.	Max.	Min.	Mean.	Sun's Rays.	Max.	Min.	Mean.			
1	E	1	36.	28.	32.	—	30.16	30.10	30.13	—	Rather dull and cloudy	BAROMETER. Max. 5th30.40 Min. 24th....28.20 — Total mean .. 29.50
2	ESE	2	37.	30.	33.50	—	30.36	30.50	30.33	—	Very fine clear day	
3	ENE	2	34.	28.	31.	—	30.39	30.37	30.38	—	Dull, hazy, and very cold	
4	ESE	3	36.	26.50	31.25	—	30.40	30.40	30.40	—	Very fine clear day	
5	SE	2	37.	26.50	31.75	—	30.30	30.26	30.28	—	Dull and hazy	THERMOMETER Shade. Max. 8th48.50 Min. 13th....21. — Total mean ..33.26
6	SE	2	36.	30.	33.	—	29.96	29.89	29.93	—	Fine clear day; cold	
7	SE	0	42.50	30.	36.25	—	29.80	29.12	29.46	.05	Fair till noon; rain p.m.	
8	SW	3	48.50	29.	38.75	—	28.89	28.85	28.87	.08	Showers of snow and rain	
9	C	3	36.	34.	35.	—	28.76	28.72	28.74	.10	A little snow towards evening	Sun. Max. —..... Min. —..... — Rain, &c. 1.15 Inches. Prevailing Wind. S.E.
10	N	2	34.	26.	30.	—	29.02	29.02	29.02	.05	Snow in the night	
11	NW	2	34.	24.	29.	—	29.31	29.29	29.30	.12	Very dull and foggy all day	
12	C	1	34.	26.	30.	—	26.66	29.54	29.60	—	Do. do.	
13	SE	0	33.	21.	27.	—	29.76	29.72	29.74	—	Very foggy on the river; clear sky	BAROMETER. Max. 5th30.40 Min. 24th....28.20 — Total mean .. 29.50
14	SE	1	36.	22.	29.	—	29.68	29.66	29.67	—	Do. in the evening	
15	SE	3	38.	26.	32.	—	29.64	29.55	29.59	—	Dense fog all day	
16	SE	3	30.	26.	28.	—	29.58	29.50	29.54	—	Do. do.	
17	SSE	2	36.	27.	31.50	—	29.58	29.54	29.56	.08	Snow shower 7 a.m.	THERMOMETER Shade. Max. 8th48.50 Min. 13th....21. — Total mean ..33.26
18	SE	2	36.	31.	33.50	—	30.00	30.00	30.00	—	Very fine clear day	
19	SSE	2	38.	31.	34.50	—	30.00	30.00	30.00	—	Fine day	
20	ESE	2	38.50	26.	32.25	—	29.66	29.54	29.60	—	Do.	
21	SE	2	40.50	29.	34.75	—	29.74	29.72	29.73	.12	Fair till evening	Sun. Max. —..... Min. —..... — Rain, &c. 1.15 Inches. Prevailing Wind. S.E.
22	SE	2	39.	31.	35.	—	29.69	29.67	29.68	.12	Wet and showery all day	
23	ESE	3	38.	32.	35.	—	29.45	29.35	29.40	.04	A little snow a.m.	
24	C	3	36.	32.	34.	—	28.26	28.20	28.23	.18	Rainy all day	
25	SE	3	48.	36.	42.	—	28.66	28.54	28.62	.14	Rain towards night	BAROMETER. Max. 5th30.40 Min. 24th....28.20 — Total mean .. 29.50
26	E	1	40.	36.	38.	—	29.06	29.02	29.04	—	Fine day; very clear evening	
27	C	1	39.	33.	36.	—	29.16	29.12	29.14	.07	Rainy; snow in night	
28	ESE	2	40.	35.	37.50	—	29.15	29.03	29.09	—	Very dull and hazy	

OBSERVATIONS.

1. Keen frost in night. 3. River very luminous. 5. Slight appearance of Aurora Borealis about nine p. m., and several meteors (falling stars). 8. A beautiful halo and coronna round the moon, nine p. m.; the prismatic colours were strikingly exhibited in the coronna. 9. Wind from N. in the morning, but veered round to N. E.; snow in the evening, and snow and rain in the night. 10. Snow in the evening, and also in the night. 12. Wind S. and S. S. E. A beautiful coronna about eight p. m. 13. A very dense fog on the river all day, but a clear sky. 14. A halo triplex round the moon, commencing about half-past eight, p. m., and continuing nearly all night. 15. Very dense fog. 16. Very dense fog all day. 17. Dull and gloomy, threatening rain or snow. 19. Slight appearance of aurora, half-past seven, p. m. River unusually luminous and phosphorescent; the steamers plying across left a train of light behind them, which could be observed for some time. 24. Very dark night; river not in the least luminous. 25. High wind in the night, accompanied with much heavy rain; barometer very low on the 24th. 27. Wind, E. a. m., gradually veering round to S., with a little snow. 28. River very luminous, with some slight appearance of aurora, eight p. m.

THIRD MONTH, (MARCH) 1838

Date.	WIND.		THERMOMETER.				BAROMETER.			Rain.	WEATHER.	RESULTS.
	Course.	Force.	Max.	Min.	Mean.	Sun's Rays.	Max.	Min.	Mean.			
1	SSE	1	46.	37.	41.50	—	29.06	29.02	29.04	—	Very clear a.m.; fine p.m.	BAROMETER. Max. 29th...30.52 Min. 1st...29.02 Total Mean...29.75
2	NW	1	45.	39.	42.	—	29.20	29.08	29.14	.10	Dull all day with rain	
3	NE	0	45.	41.	43.	—	29.19	29.15	29.17	.01	Ditto very foggy	
4	E	1	42.	35.	38.50	—	29.08	29.06	29.07	.06	Cloudy and dull	
5	SSE	3	46.	33.	39.50	—	29.72	29.66	29.69	.12	Very fine clear day	THERMOMETER. Shade. Max. 13th...54.00 Min. 23d...30.00 Total Mean...40.69
6	W	4	45.	44.	44.50	—	29.52	29.50	29.51	—	Stormy day; misty	
7	W	4	45.	37.	41.	—	29.76	29.72	29.74	—	Ditto	
8	WNW	3	44.	36.	40.	—	30.18	30.12	30.15	—	Fine day, rather windy	
9	C	2	44.	34.	39.	—	30.22	30.16	30.19	—	Very fine clear day	Sun. Max. — Min. — Total Mean... —
10	SSE	0	45.	35.	40.	—	30.00	29.80	29.90	.09	Foggy; rain about 5 p.m.	
11	C	1	47.	37.	42.	—	29.90	29.78	29.84	.20	Very showery all day	
12	S	2	45.	39.	42.	—	30.11	30.11	30.11	.02	Very fine and clear	
13	W	0	54.	39.	46.50	—	29.97	29.95	29.96	.05	Rain in the night	Rain, &c. 1.21 Inches. Prevailing Winds. S. W. S.W.
14	C	1	48.	40.	44.	—	29.92	29.86	29.89	.02	Showery; very fine at intervals	
15	NW	1	50.	40.	45.	—	30.00	29.90	29.95	—	Fine clear day	
16	WNW	4	42.	40.	41.	—	29.60	29.55	29.57	.12	Rain and snow a.m.	
17	NW	4	44.	32.	38.	—	29.45	29.43	29.44	.02	Very stormy; hail showers p.m.	Sun. Max. — Min. — Total Mean... —
18	NNW	2	45.	35.	40.	—	29.56	29.50	29.53	.06	Fair; rain in the night	
19	SW	2	47.	37.	42.	—	29.70	29.68	29.69	—	Fine day; gloomy p.m.	
20	WNW	3	43.	40.	41.50	—	28.89	28.89	28.88	—	Foggy afternoon	
21	C	4	42.	32.	37.	—	29.30	29.26	29.28	—	Stormy; cloudy p.m.	Rain, &c. 1.21 Inches. Prevailing Winds. S. W. S.W.
22	N	4	40.	32.	36.	—	29.77	29.57	29.67	—	Ditto and very glo. my	
23	N	1	37.	30.	33.50	—	29.55	29.53	29.54	.09	Wet day and foggy	
24	SSW	2	44.	33.	38.50	—	29.68	29.64	29.66	.22	Rain and snow a.m.	
25	NW	3	44.	33.	38.50	—	29.84	29.76	29.80	—	Very fine clear day	Sun. Max. — Min. — Total Mean... —
26	SSE	1	45.	35.	40.	—	30.10	29.90	30.00	.03	Showery a.m.; fair p.m.	
27	NW	1	53.	37.	45.	—	30.36	30.34	30.35	—	Very fine day	
28	NW	3	52.	36.	44.	—	30.50	30.40	30.45	—	Dull and very foggy	
29	NNW	3	42.	38.	40.	—	30.52	30.48	30.50	—	Very dense fog	Sun. Max. — Min. — Total Mean... —
30	NNW	1	43.	35.	39.	—	30.44	30.44	30.44	—	Ditto	
31	NNE	1	44.	34.	39.	—	30.44	30.44	30.44	.02	Ditto snow p.m.	

OBSERVATIONS.

1. Much milder than we have had it. 5. Fine day; about nine p. m., it commenced raining, and continued during the night, with a high wind. 6. A slight aurora in the evening. 7. Very squally, wind blowing in gusts. 9. Wind nearly due S. in the morning, S.S.E. in the afternoon. 11. From S.E. a. m., the wind got round to S. 12. Wind very changeable, blowing W. SW. and WSW. during the day. 15. River very phosphorescent in the evening. 17. Stormy in the night, with heavy showers of hail. 18. A fine coronna round the moon. 20. Very high wind in the night. 21. From N., the wind changed to WNW. 22. Stormy night. 23. Very high wind in the night. 24. Much snow in the night. Sleet a. m. 25. Very stormy in the night. 26. A beautiful rainbow observed in the shower in the early part of the morning. 27. Very mild spring day. 28. Clear about noon. 29. Very dense fog, all day and night; very dangerous on the river, many accidents occurred from vessels running foul of each other. 30. Dense fog still continues. 31. Fog still very dense. Snow in the afternoon, every appearance of much downfall.

FOURTH MONTH, (APRIL) 1838.

Date.	WIND.		THERMOMETER.				BAROMETER.			Rain.	WEATHER.	RESULTS.
	Course.	Force.	Max.	Min.	Mean.	Sun's Ray's	Max.	Min.	Mean.			
1	NE	1	40.	26.	33.	—	30.08	30.04	30.06	—	Very fine clear day	BAROMETER. Max. 2d ... 30.10 Min. 21st & 22d 29.20 — Total Mean.. 29.80
2	NW	3	38.	28.	33.	—	30.10	29.90	30.00	—	Cold and boisterous	
3	C	2	44.	29.	36.50	—	30.08	30.04	30.06	.01	Showery towards evening	
4	NW	4	51.	40.	45.50	—	30.00	29.90	29.95	—	Cold wind; dull and cloudy	THERMOMETER Shade. Max. 15th .. 61.00 Min. 1st ... 26.00 — Total Mean.. 43.13
5	W	3	50.	39.	44.50	—	30.00	29.90	29.95	.24	Very showery p.m.	
6	C	2	52.	45.	48.50	—	30.00	30.00	30.00	—	Very fine day; milder	
7	C	2	51.	45.	48.	—	30.08	30.04	30.06	.92	Stormy evening and night	Sun. Max. — Min. — — Total Mean..
8	N	4	48.	35.	41.50	—	30.00	29.70	29.85	.06	Fair; sharp breeze a.m.	
9	N	1	45.	35.	40.	—	30.00	29.80	29.90	—	Fine; warmer; evening foggy	
10	C	1	60.	45.	52.50	—	29.90	29.90	29.90	—	Warm spring day	Rain, &c. 1.84 Inches. Prevailing Wind. N
11	W	2	57.	45.	51.	—	29.90	29.90	29.90	—	Wind high towards evening	
12	C	1	57.	45.	51.	—	29.95	29.95	29.95	—	Very fine clear day	
13	N	2	60.	45.	52.50	—	29.90	29.88	29.89	—	Fine and genial	Barometer. Max. — Min. — — Total Mean..
14	N	1	58.	42.	50.	—	30.00	29.56	29.78	—	Fine spring day	
15	N	4	61.	34.	47.50	—	29.90	29.82	29.86	.02	Fine but very high wind	
16	SW	4	43.	33.	38.	—	29.90	29.50	29.70	.50	Very stormy day	Barometer. Max. — Min. — — Total Mean..
17	N	4	43.	31.	37.	—	29.60	29.55	29.57	—	Ditto	
18	N	4	42.	31.	36.50	—	29.82	29.68	29.75	—	Wind much abated	
19	N	2	40.	31.	35.50	—	29.90	29.90	29.90	.01	Cold breeze	Barometer. Max. — Min. — — Total Mean..
20	N	2	43.	33.	38.	—	29.75	29.70	29.72	—	Fine clear day; milder	
21	NW	0	50.	37.	43.50	—	29.61	29.20	29.40	—	Ditto ditto	
22	SE	0	47.	39.	43.	—	29.20	29.20	29.20	.02	Very wet evening	Barometer. Max. — Min. — — Total Mean..
23	S	1	51.	41.	46.	—	29.30	29.30	29.30	—	Fine day; warm	
24	ENE	1	53.	39.	46.	—	29.72	29.50	29.61	—	Ditto; a little rain at noon	
25	C	1	52.50	40.	46.25	—	29.90	29.84	29.87	—	Very fine day	Barometer. Max. — Min. — — Total Mean..
26	E	2	49.	35.50	42.75	—	30.05	30.00	30.02	.01	Ditto cool	
27	E	2	51.50	35.50	43.50	—	30.00	30.00	30.00	—	Rather dull a.m.; clear p.m.	
28	C	3	45.50	36.	40.75	—	29.90	29.78	29.84	—	Very fine day	Barometer. Max. — Min. — — Total Mean..
29	N	2	44.	41.	41.	—	29.75	29.70	29.72	.03	Clear a.m.; cold air	
30	NW	1	43.50	41.25	41.25	—	29.70	29.45	29.57	.02	Dull and drizzly; cold	

OBSERVATIONS.

3. Wind N. W. a. m.; W. p. m. 5. A beautiful halo discoides in the evening. The cumulo-strati clouds had a very fine appearance. 6. Wind N. W. during the forepart of the day, veering round to nearly due N. towards evening. 7. Gentle breezes from S. a. m., the wind gradually shifted round to W. p. m., from which quarter it blew pretty freely. 10. A partial eclipse of the moon, commencing at 12 h. 20 min., and ending 3 h. 13 min. in the morning. The weather was favourable for making observations, although the scene was occasionally entirely hidden from the view by the dense masses of cirro cumuli which were afloat in the atmosphere. From W. the wind changed round to S. W. before evening. 11. Windy in the night. 12. Wind S. W. and W. 13. Very fine mild spring day. 15. Wind very strong from the north. In the afternoon it blew a perfect hurricane, accompanied with several very heavy showers of hail. The wind and tide meeting each other caused the river to be very rough. 16. High winds still continue to blow; now rather more from the west. Several heavy showers, with hail and sleet during the day. 19. Cold: wind abated. There was a fall of snow between four and six a. m., which however did not lay long on the ground. 21. Barometer falling rapidly; and nimbification appears to be going on among the clouds. 24. Very dark night; river very luminous. 25. Wind E. N. E. till evening, when it had veered round to N. 26. Slight shower of rain in the forenoon. 27. Rather dull a. m.; beautiful clear afternoon. 28. Wind in the morning E. N. E., towards noon N., evening N. W.; very clear sky till evening, when the clouds began to collect in dense masses, which terminated ultimately in the formation of Nimbus. 29. Dull p. m. rain in the night. About three p. m., in order to ascertain the different currents in the atmosphere, I set up a small balloon filled with hydrogen gas, which first moved in a southern direction, but having risen some height, it was carried in a current almost due north, and having risen higher still, it blew towards N. W. and I lost sight of it. 30. Very hazy and dull all day, with occasional slight depositions.

FIFTH MONTH, (MAY) 1833.

Date.	WIND.		THERMOMETER.				BAROMETER.			Rain.	WEATHER.	RESULTS.
	Course.	Force.	Max.	Min.	Mean.	Sun's Rays.	Max.	Min.	Mean.			
1	SE	1	49.	39.	44.	64.	29.55	29.45	29.50	.06	Very cold and dull	BAROMETER. Max 10h....30 40 Min. 21st....29.30 Total Mean..29 85
2	SSE	0	57.	39.	48.	68.	29.60	29.60	29.60	.04	Milder; wet all day	
3	WSW	0	60.	46.	53.	66.	29.75	29.73	29.74	.09	Showers all day	
4	N	1	50.	44.	47.	56.	30.10	30.05	30.07	.06	Slight showers all day	THERMOMETER Shade. Max. 28th .. 68.00 Min. 15&16th 35 00 Total Mean ..49 63
5	N	1	53.	44.	50.	63.	30.30	30.20	30.25	.04	Ditto ditto	
6	ESE	1	66.	47.	56.50	87.	30.32	30.30	30.31	—	Very clear warm day	
7	SW	0	65.	51.	58.	97.50	30.32	30.32	30.32	—	Very warm; cloudless sky	BAROMETER. Max. 7th....97 50 Min. 21st....53.00 Total Mean..72 66
8	C	0	61.	51.	56.	91.50	30.30	30.28	30.29	—	Ditto ditto	
9	C	0	63.	42.	52.50	87.	30.30	30.28	30.28	—	Clear till evening	
10	E	3	52.	40.	46.	80.	30.40	30.35	30.37	—	Very fine day, but cold	BAROMETER. Max. 10h....30 40 Min. 21st....29.30 Total Mean..29 85
11	N	1	56.	37.	46.50	82.	30.32	30.30	30.31	—	Ditto ditto	
12	N	1	59.	42.	50.50	84.50	30.10	29.85	29.97	—	Very dull towards evening	
13	N	2	51.50	41.	46.25	75.	29.70	29.70	29.70	—	Slight rain and sleet 3 p.m.	THERMOMETER Shade. Max. 28th .. 68.00 Min. 15&16th 35 00 Total Mean ..49 63
14	C	2	50.	37.	43.50	79.	29.70	29.70	29.70	—	Very fine and clear, but cold	
15	N	1	48.	35.	41.50	80.	29.75	29.75	29.75	—	Ditto ditto	
16	C	1	48.	35.	41.50	77.	29.75	29.75	29.75	—	Very cold; fine and clear	BAROMETER. Max. 7th....97 50 Min. 21st....53.00 Total Mean..72 66
17	N	1	49.	38.	43.50	76.	29.75	29.75	29.75	—	Ditto ditto	
18	SSW	1	52.	38.	45.	63.	29.75	29.75	29.75	.02	Cloudy and dull cold	
19	C	4	46.	42.	44.	48.	29.65	29.55	29.60	.09	Very cold; rain in night	BAROMETER. Max. 10h....30 40 Min. 21st....29.30 Total Mean..29 85
20	SSE	1	50.	41.	45.50	55.	29.50	29.40	29.45	.16	Showery all day	
21	WNW	0	49.50	49.	49.75	53.	29.50	29.40	29.40	.28	Wet all day	
22	NW	2	51.	46.	48.50	60.	29.60	29.40	29.50	.60	Ditto; wind high p.m.	THERMOMETER Shade. Max. 28th .. 68.00 Min. 15&16th 35 00 Total Mean ..49 63
23	WNW	3	53.	45.	49.	56.50	29.88	29.70	29.75	.14	Showery all day	
24	E	2	60.	46.50	43.25	65.	30.00	29.90	29.95	.04	Fair; rain in the night	
25	SE	1	62.	47.	54.50	70.	30.00	30.00	30.00	—	Very fine day	BAROMETER. Max. 7th....97 50 Min. 21st....53.00 Total Mean..72 66
26	SSE	2	61.	47.	54.	75.50	30.07	30.02	30.04	—	Clear a.m.; very fine day	
27	NE	2	61.	43.	52.	77.	30.00	29.80	29.90	—	Fine clear day	
28	E	3	68.	45.	56.50	81.	29.82	29.50	29.66	—	Clear a.m.; dull evening	BAROMETER. Max. 10h....30 40 Min. 21st....29.30 Total Mean..29 85
29	C	1	63.	52.	57.50	79.	29.55	29.50	29.52	.02	Showery; very close	
30	N	1	63.	51.	57.	80.	29.80	29.70	29.75	—	Slight shower at noon	
31	C	0	64.	52.	58.	76.	29.90	29.85	29.87	.20	Very dull and gloomy	Prevailing Wind. N and SE

OBSERVATIONS.

2. Rain in the evening with thunder and lightning. 4. At sunset the heavens presented a very beautiful lurid appearance, which was so strikingly observed in Liverpool, more especially in the west, that I heard several remark the heavens were on fire. 6. Slight corona round the moon. 7. 8. There was not a cloud to be seen till sunset on the eighth, when a few beautiful pencilled cirri made their appearance, which accumulated rapidly towards the ensuing morning, when they were again dissipated by the continued warmth of the weather. Having perceived the rapid growth of a hop plant (*humulus lupulus*), on the 6th, I marked on the pole to which it clung the exact height it had attained, and having watered it well once or twice, it had in the evening, in 12 hours, grown no less than four inches and one-eighth, and on the 8th, three inches and a quarter, in the same space of time; a rapidity of growth I should think almost unparalleled in the vegetable world. In a letter from my friend Samuel Marshall, of Kendal, (who keeps a regular Meteorological Journal there), he informs me that he once made similar observations on the rapid growth of this plant, and that with the assistance of a powerful magnifier he "could distinctly observe the growth of the plant, and a regular increase in length, or prolongation of the stalk." On the eighth the wind was S.W. till noon, when it gradually shifted to N.W. 9. Wind changeable, S.E., N.W. and W. 14. Wind from N. to S. S.E. A hoar frost observed in the morning in the country. 13. Very fine and clear till about three p.m. when the clouds gathered with a very slight deposition. 16. Wind N. a. m., W. p. m. 19. Wind shifted from S. to S.E. 20. Stormy and boisterous during the forepart of the night. A beautiful rainbow was seen about five p. m. 22. Very stormy night. 24. Fine sunny day. 28. Very fine warm day, thermometer sixty-eight in shade; in the sun, eighty-one. 29. Wind S. till evening, when it had got round to S.W. 31. Slight shower in the evening, the greatest part of the rain noted down fell in the night. From N., the wind changed to N.E.

SIXTH MONTH, (JUNE) 1838.

Date.	WIND.		THERMOMETER.				BAROMETER.			Rain.	WEATHER.	RESULTS.
	Course.	Force.	Max.	Min.	Mean.	Sun's Ray's	Max.	Min.	Mean.			
1	SSE	1	62.	49.	55.50	71.	29.84	29.80	29.82	.04	Dull and cloudy all day	BAROMETER. Max. 7th & 8th 30.18 Min. 21st. . . . 29.45 ——— Total Mean. . 29.77
2	WNW	1	64.	48.	56.	78.	29.76	29.70	29.73	—	Beautiful, clear and warm	
3	C	1	65.	51.	58.	80.	29.62	29.58	29.60	.72	Very close and sultry	
4	NW	2	61.	51.	56.	71.	29.72	29.62	29.67	—	Fine day; clear sunset	
5	NW	2	58.	50.	54.	85.	29.84	29.76	29.80	—	Very fine day	
6	NW	2	58.	46.	52.	83.	30.18	30.04	30.11	—	Do. evening cold	THERMOMETER † Shade. Max. 24th . . 71.00 Min. 7th . . . 44.00 ——— Total Mean. . 56.10
7	C	3	53.	44.	48.50	75.	30.18	30.18	30.18	—	Fine day; rather cold	
8	C	0	52.	46.	49.	76.50	30.18	30.18	30.18	—	Ditto still cold	
9	C	1	61.	46.	53.50	67.	30.10	30.82	29.96	—	Cloudy and cold	
10	SE	1	60.	50.	55.	77.	29.60	29.50	29.55	.06	Showery all day	
11	N	1	58.	48.	53.	77.	29.50	29.50	29.50	.98	Much rain, day and night.	Sun. Max. 24th . . 93.00 Min. 13th . . 60.00 ——— Total Mean. . 77.91
12	SE	1	62.50	53.	57.75	73.	29.69	29.53	29.61	—	Dull a.m.; clear p.m.	
13	N	1	58.	52.	55.	60.	29.72	29.65	29.68	.06	Dull and drizzly; foggy.	
14	N	0	61.	56.50	58.75	77.	29.62	29.60	29.61	.06	Ditto ditto	
15	C	1	59.	55.	57.	73.	29.60	29.60	29.60	.20	Very foggy evening.	
16	SW	1	64.	50.	56.	67.	29.64	29.60	29.62	.34	Showery all day; dull.	Rain, &c. 4.62 Inches. Prevailing Winds NW & N.
17	N	1	63.	54.	58.50	88.	29.70	29.66	29.68	—	Fine clear day	
18	C	0	64.	56.	60.	66.	29.60	29.40	29.50	1.06	Very wet all day.	
19	W	3	62.	54.	58.	77.	29.75	29.55	29.65	.92	Fair; rain in the night.	
20	SW	3	62.	49.	55.50	63.	29.60	29.40	29.50	.14	Fair a.m.; showery p.m.	
21	N SW	3	61.	51.	56.	70.	29.45	29.40	29.42	—	Fine and clear a.m.; dull p.m.	Sun. Max. 24th . . 93.00 Min. 13th . . 60.00 ——— Total Mean. . 77.91
22	WSW	3	62.50	50.	56.25	71.50	29.83	29.55	29.69	—	Very slight shower p.m.	
23	N NW	3	64.	50.	57.	90.	30.05	29.90	29.97	—	Fine day, warm.	
24	C	1	71.	51.	61.	93.	30.00	29.95	29.97	—	Very fine and clear.	
25	NW	1	64.	52.	58.	89.	30.03	30.01	30.02	—	Ditto ditto	
26	N	1	62.	54.	58.	82.50	30.00	29.90	29.95	—	Very fine day	Rain, &c. 4.62 Inches. Prevailing Winds NW & N.
27	N	0	63.	53.	58.	90.	29.90	29.90	29.90	—	Very slight deposition p.m.	
28	C	0	65.	51.	58.	90.	29.90	29.90	29.90	.04	Fine day but showery.	
29	WNW	1	65.	51.	58.	85.	29.90	29.90	29.90	—	Very fine day	
30	ESE	1	66.50	53.	59.75	92.	29.85	29.85	29.82	—	Ditto; dull p.m.	

OBSERVATIONS.

3. Wind N.W. a. m., gradually veering round to S., with heavy rain and a little thunder and lightning. 4. Very fine sunset. 7. Very cold to-day. Wind N.W. and W. 8. Wind N.W. again by evening; very beautiful "mackerel-back sky." 9. Wind N. and N.W. 11. Heavy showers; about 2 p. m. Very dark over Liverpool, clouds moving in an opposite direction to the wind. 13. Thick fog in the evening. 15. From N. the wind gradually shifted to S.W. p. m., with much rain in heavy showers. 16. Most part of the rain fell during the night. 18. Wind S. a. m., N.W. p. m. About 5 p.m. a sudden darkness prevailed, so that in town many were obliged to light their lamps, and in a few minutes the rain poured down in torrents; I was in Liverpool at the time, and never witnessed a heavier downfall. The sewers soon became quite full and choked, so that the water ran down the streets from the more elevated parts of the town in such a quantity as to give them the appearance of rivers, whilst the lower parts were entirely inundated. The storm, which passed over in about half an hour, was accompanied with frequent loud claps of thunder and vivid flashes of lightning. The wind was high in the evening. 23. Fine filiform cirri early in the morning, and beautiful "mackerel-back sky in the evening." 24. Wind from S. to W.N.W.; in the afternoon there was hardly a cloud to be seen. 25. Clear sky about noon, very few clouds visible. 28. A heavy shower about 4 p. m., and also between 5 and 6, during which a beautiful double rainbow (Iris duplex) was observed, the colours of the primary bow of which were the most vivid I ever recollect seeing. It continued for some time, and was also accompanied with a phenomenon which I never heard described or saw before; it consisted of a perpendicular column rising from the base of the primary bow, crossing the secondary bow, and continuing a short distance above it. It exhibited the prismatic colours to about the same intensity as the secondary bow, but they occurred in the same rotation as in the primary one. It was observed by many persons at Woodside, and also in some neighbouring places, and was quite a novelty to every one. The column was not observed till the arcs had been visible about five minutes, and the whole phenomenon disappeared together after about 20 minutes duration. Wind from N.W. to S.E. 30. A little thunder and lightning in the evening.

SEVENTH MONTH, (JULY) 1838.

Date.	WIND.		THERMOMETER.				BAROMETER.			Rain.	WEATHER.	RESULTS.
	Course.	Force.	Max.	Min.	Mean.	Sun's Rays.	Max.	Min.	Mean.			
1	SSE	2	68.	56.	62.	80.	29.95	29.90	29.92	—	Very fine clear day.	BAROMETER. Max. 18th...30.28 Min. 29&30th 29.55 Total Mean..29.92
2	SE	1	66.	56.	61.	88.	30.00	30.00	30.00	.04	Fine day; rain, 8 a. m.	
3	NW	1	68.	58.	63.	74.	30.07	30.05	30.06	.16	Cloudy, and very dull.	
4	E	2	70.	60.	65.	80.	30.10	30.07	30.08	.14	Fine day, but showery.	THERMOMETER Shade. Max. 9th .. 75. Min. 23&25th 50. Total Mean .. 60.43
5	SW	0	74.	56.	65.	83.	30.10	30.06	30.08	.14	Fine day; thunder in night.	
6	SW	0	73.	61.	65.	82.	29.98	29.82	29.90	.24	Thundery; heavy showers.	
7	C	1	66.	56.	67.	81.50	29.90	29.81	29.85	.03	Dull and gloomy all day.	Sun. Max. 12th .. 90. Min. 28th .. 66. Total Mean..76.96
8	WNW	0	68.	56.	61.	80.	30.00	30.00	30.00	—	Cloudy and dull.	
9	WSW	1	75.	57.	62.	78.	30.08	30.06	30.07	—	Fine day; clear p. m.	
10	SSW	0	66.	58.	66.	80.	30.06	30.00	30.03	—	Dull, a little rain p. m.	Rain, &c. 3.07 Inches.
11	SSW	2	70.	58.	62.	79.	30.01	29.90	29.95	.12	Very fine clear day.	
12	C	1	68.	62.	65.	90.	29.98	29.94	29.96	—	Dull day, rainbow p. m.	
13	SSW	2	68.	60.	64.	70.	29.90	29.88	29.86	.04	Fair; rain in night.	Prevailing Winds. NW and SW
14	C	3	68.	58.	63.	75.50	29.59	29.57	29.55	.19	Wind high p. m., rain.	
15	WSW	3	64.	58.	61.	74.	29.60	29.56	29.58	.14	Very fine morning.	
16	NW	0	65.	55.	60.	72.	30.05	29.95	30.00	—	Fine day, windy.	Sun. Max. 12th .. 90. Min. 28th .. 66. Total Mean..76.96
17	SW	3	64.	55.	59.50	80.	30.00	30.00	30.00	.24	Dull and gloomy; showery.	
18	NW	2	63.	53.	58.	76.	30.28	30.07	30.14	—	Very fine clear day.	
19	NW	2	64.	54.	59.	78.	30.09	30.07	30.05	—	ditto	Rain, &c. 3.07 Inches.
20	NW	2	62.	58.	60.	74.	30.00	29.80	29.90	.20	ditto	
21	NNW	2	68.	58.	63.	90.	30.15	30.05	30.10	—	ditto	
22	NNW	2	65.	56.	60.50	78.	30.15	30.05	30.10	—	Cold, but fine day.	Prevailing Winds. NW and SW
23	NNW	2	61.	52.	56.50	67.	30.20	30.04	30.12	.12	Cloudy and dull; rain p. m.	
24	NW	1	59.	51.	55.	68.	30.10	30.00	30.05	.08	Very cold; rain in night.	
25	NW	2	64.	50.	57.	70.	30.10	30.00	30.05	—	Very fine day; cold.	Sun. Max. 12th .. 90. Min. 28th .. 66. Total Mean..76.96
26	SW	2	59.	51.	55.	71.	29.96	29.66	29.80	.08	Fine day; rain in the night.	
27	C	2	62.	52.	57.	78.	29.80	29.65	29.70	.24	Dull and showery.	
28	NW	3	58.	50.	54.	66.	29.80	29.66	29.70	.15	Fine at intervals.	Prevailing Winds. NW and SW
29	NNW	2	60.	52.	56.	78.	29.61	29.55	29.58	.58	Heavy showers a. m.	
30	NW	1	59.	51.	55.	71.	29.65	29.55	29.60	.14	Showery a. m.; fine p. m.	
31	NW	1	61.	51.	56.	74.	29.90	29.86	29.88	—	Dull and gloomy.	

OBSERVATIONS.

3. Showers p. m. 4. A Clematis in the garden has made a shoot this season of upwards of three yards in length. 5. Having been long on the look-out for the mirage? (which is said to occur only in particular states of the atmosphere,) I was hardly ever so delighted as when I beheld this singular phenomenon about 2 p.m. to-day, when crossing the river. It occurred towards the Rock Ferry, the shore in the neighbourhood appearing to be considerably elevated, whilst the Lazarettos and vessels lying between us and the shore seemed to be doubly reflected or refracted in the atmosphere, appearing first on the same level and beyond where they really were, and at the same time also in an inverted position immediately above. R, Tudor, of Bootle, informs me he has frequently witnessed this phenomenon, but without the inverted position. The day was fine and clear, with little or no wind, but it became more cloudy towards evening. I had not an opportunity of ascertaining at what time the phenomenon was first observed, or how long it continued. 7. Wind W. a.m.; p.m. W.N.W. 9. Very beautiful filiform cirri about noon. 12. Fine coronna round the moon. Wind very changeable during the day, being S.W. N.W. W. and S.W. 14. Wind from S.W. a.m.; p.m. it got round rather more to southward, increasing in strength, with rain. 15. Wind high in the evening, with much rain. 18. Wind high in the morning, but much abated p.m. 19. Slight and very faint coronna round the moon. 20. Slight deposition 7 p. m., during which a rainbow was observed. There was rain also in the night. 23. Rain in the night. 24. Very fine clear morning, but cloudy towards evening, turning to rain. 25. Beautiful filiform and plumose cirri about noon towards the east, with dense cumuli and cumulo-strati to the west. 26. Wind high in the evening and through the night. 27. Slight shower about 5 p. m., with a fine rainbow. Wind N.W. and W.N.W. 29. Very fine afternoon, and clear; 6 p. m. beautiful cirri all over the heavens. 31. Clouds very thick in the evening. Water a little luminous.

EIGHTH MONTH, (AUGUST) 1838.

Date.	WIND.		THERMOMETER.				BAROMETER.			Rain.	WEATHER.	RESULTS.
	Course.	Force.	Max.	Min.	Ma n.	Sun's Rays.	Max.	Min.	Mean.			
1	SW	2	66.	56.	61.	71.	29.90	29.65	29.77	.04	Dull and gloomy.	BAROMETER. Max. 14 & 30th 30.20 Min. 22d 28.98 Total Mean.. 29.83
2	SW	2	67.	55.	61.	76.	29.60	29.55	29.57	.08	Wet a.m.; fine p.m.	
3	NW	3	66.	56.	61.	77.	29.62	29.52	29.57	.10	Dull day; wind high p.m.	
4	SW	2	66.	54.	60.	75.	29.47	29.47	29.47	.02	Showery all day	THERMOMETER Shade. Max. 11th .. 72.00 Min. 31st 48.00 Total Mean.. 58.96
5	SW	3	70.	57.	63.50	78.	29.39	29.36	29.38	—	Fine and clear; cloudy evening	
6	C	2	65.	53.	59.	72.	29.40	29.30	29.35	.14	Wet and showery all day.	
7	NW	3	60.	55.	57.50	76.	29.70	29.62	29.66	.42	Cloudy and dull.	BAROMETER. Max. 14 & 30th 30.20 Min. 22d 28.98 Total Mean.. 29.83
8	NW	1	61.	57.	59.	69.	30.14	30.10	30.12	—	Dull a.m.; fine p.m.	
9	C	1	66.	54.	60.	74.	30.00	29.96	29.98	.74	Wet and showery.	
10	WSW	2	65.	53.	59.	76.	29.88	29.88	29.88	.83	Ditto ditto	THERMOMETER Shade. Max. 11th .. 72.00 Min. 31st 48.00 Total Mean.. 58.96
11	SW.	0	72.	62.	67.	84.	29.96	29.94	29.95	.62	Very fine clear day	
12	W	3	68.	58.	63.	80.	30.04	29.90	29.97	—	Dull and gloomy a.m.; fine p.m.	
13	NW	2	62.	56.	59.	78.	30.06	30.00	30.03	—	Fine day; fresh breeze.	BAROMETER. Max. 14 & 30th 30.20 Min. 22d 28.98 Total Mean.. 29.83
14	NW	2	62.	55.	60.	76.	30.20	30.16	30.18	—	Fine clear day	
15	NNW	2	62.	55.	58.50	74.	30.14	30.12	30.13	—	Do. cold.	
16	NW	1	63.	53.	58.	76.	30.12	30.04	30.08	.06	Cloudy a.m.; wet p.m.	THERMOMETER Shade. Max. 11th .. 72.00 Min. 31st 48.00 Total Mean.. 58.96
17	C	2	62.	52.	57.	74.	30.16	30.12	30.14	—	Ditto; fine p.m.	
18	C	0	65.	56.	60.50	78.	30.12	30.12	30.12	.08	Very dull and close.	
19	WNW	0	65.	55.	60.	81.	29.94	29.80	29.87	.15	Fine day; rain at noon.	BAROMETER. Max. 14 & 30th 30.20 Min. 22d 28.98 Total Mean.. 29.83
20	SW	3	62.	51.	58.	76.	29.60	29.54	29.57	.24	Showery nearly all day.	
21	SW	3	60.	52.	56.	74.	29.18	29.14	29.16	.06	Fine day; very cold wind.	
22	NW	3	60.	52.	56.	76.	29.10	28.98	29.04	—	Very cold wind.	THERMOMETER Shade. Max. 11th .. 72.00 Min. 31st 48.00 Total Mean.. 58.96
23	NNW	0	62.	52.	57.	72.	29.60	29.52	29.56	—	Dull and gloomy a.m.; clear p.m.	
24	NNW	1	61.	56.	58.50	72.	30.00	29.90	29.95	.09	Fine day; clear p.m.	
25	SE	0	58.	52.	55.	70.	29.95	29.90	29.92	.14	Showery all day; cold.	BAROMETER. Max. 14 & 30th 30.20 Min. 22d 28.98 Total Mean.. 29.83
26	C	1	63.	49.	56.	70.	30.04	29.96	30.00	—	Fine and clear a.m.; dull p.m.	
27	WNW	1	68.	52.	60.	80.	30.09	30.09	30.09	—	Fine day; rather cloudy.	
28	NW	2	69.	60.	64.50	81.	29.90	29.84	29.87	.24	Dull and cloudy.	THERMOMETER Shade. Max. 11th .. 72.00 Min. 31st 48.00 Total Mean.. 58.96
29	NW	2	58.	52.	55.	74.	30.05	29.95	30.00	—	Very fine clear day.	
30	WNW	2	60.	50.	55.	70.	30.20	30.14	30.17	.02	Fine at intervals.	
31	C	2	53.	43.	53.	68.	30.16	30.10	30.13	.04	Dull day and showery.	Prevailing Winds. NW. SW.

OBSERVATIONS.

1. Beautiful cirri, early a.m.; very wet night. 2. Gloomy, wet morning; very close, but fine afternoon, with increase of wind, and more rain. 3. Rain p.m. 4. Heavy rain, half-past one p.m. 6. Wind, SW. a.m., NW. before evening. 7. Very stormy night. Heavy showers about seven a.m. Wind SE to SW. 9. Rain in the night. 10. Rain in the night. 11. Much heavy rain in the night. 16. A fine rainbow observed during a shower p.m. 17. Wind variable; SE a.m.; NW, inclining to NNW, towards evening. 18. Rain about noon. Wind very changeable; from SE it gradually got round to W by N. 19. The day cleared up towards evening, but more rain in the night. The wind is very cold, and the season altogether very wet and ungenial. The crops must be suffering from the quantity of rain which has fallen, but the accounts from many parts of the country are more favourable than could have been expected. 22. Still cold; strong wind in the night. 24. Rain in the night. 26. Wind NW a.m., SW p.m. 28. Heavy showers p.m. About eight in the evening much overcast, and threatening rain, with a great deal of sheet lightning unaccompanied with any report. It is a popular belief that this kind of lightning has a great effect in ripening corn and grain, the correctness of which I am inclined to discredit. 29. Morning very bright and clear; sky covered with beautiful plumose and filiform cirri; rather dull and cold p.m. 31. Wind very changeable.

NINTH MONTH, (SEPTEMBER) 1833.

Date.	WIND.		THERMOMETER.				BAROMETER.			Rain.	WEATHER.	RESULTS.
	Course.	Force.	Max.	Min.	Mean.	Sun's Rays.	Max.	Min.	Mean.			
1	NW	2	64.	54.	59.	68.	30.02	29.90	29.96	.02	Dull and gloomy; cloudy	BAROMETER. Max. 11th....30.48 Min. 6th29.06 Total Mean ..29.92
2	NW	1	65.	53.	59.	70.	30.04	30.04	30.04	.34	Very wet and showery all day	
3	NW	0	62.	52.	57.	71.	30.10	30.02	30.06	.06	Showery a.m.; fine p.m.	
4	SE	0	65.	55.	60.	74.	29.90	29.80	29.85	—	Fine clear day	
5	SSE	1	69.	55.	62.	72.	29.40	29.36	29.38	.29	ditto cloudy	THERMOMETER Shade. Max. 5th69. Min. 22d42. Total Mean ..54.98
6	NW	2	64.	54.	59.	74.	29.19	29.06	29.12	—	Dull day; clear evening	
7	C	3	53.	48.	51.	70.	29.35	29.35	29.35	.14	Very cold, rain in night	
8	NE	3	54.	49.	51.	68.	29.80	29.70	29.75	—	Still very cold	
9	NW	2	55.	45.	50.	68.	30.12	30.08	30.10	.42	Heavy rain in the night	Sun. Max. 15th....81. Min. 28th....67. Total Mean ..72.56
10	WNW	1	59.	49.	54.	70.	30.44	30.38	30.41	—	Fine day; milder	
11	NW	2	61.	47.	54.	73.	30.48	30.48	30.48	—	ditto	
12	W	1	63.	51.	57.	74.	30.40	30.34	30.37	—	Dull day, but warmer	
13	SSW	0	65.	59.	61.	74.	30.28	30.20	30.24	—	Very fine day	Rain, &c. 2.07 Inches. Prevailing Wind. NW
14	NW	2	67.	55.	61.	79.	30.05	30.05	30.05	—	ditto; cloudy evening	
15	SSE	1	68.	60.	64.	81.	30.04	30.04	30.04	—	Fine clear warm day	
16	NW	1	64.	55.	59.50	80.	30.06	30.06	30.06	—	ditto	
17	E	1	60.	56.	58.	74.	30.12	30.08	30.10	—	Very dull and foggy	Total Mean ..72.56
18	ESE	0	54.	46.	50.	72.	30.08	30.04	30.06	—	Rather dull and cold	
19	SW	1	61.	43.	52.	70.	29.92	29.80	29.86	.02	Dull and gloomy	
20	C	1	61.	51.	56.	71.	29.86	29.74	29.80	.63	Heavy rain in the night	
21	SW	0	60.	46.	53.	74.	29.90	29.84	29.87	—	Very fine clear day	Total Mean ..72.56
22	SSE	1	58.	42.	50.	74.	29.90	29.88	29.89	—	Very dull, gloomy, and cold	
23	SW	0	57.	49.	53.	72.	29.84	29.72	29.78	.04	Beautiful clear day	
24	SSE	0	56.	50.	50.	74.	29.86	29.84	29.85	.04	Very fine a.m.; dull p.m.	
25	N	1	54.	49.	51.	76.	29.84	29.84	29.84	.03	Very dull and cloudy	Total Mean ..72.56
26	NE	0	59.	49.	54.	73.	29.92	29.84	29.88	.04	ditto	
27	NNW	1	58.	50.	54.	71.	29.90	29.86	29.88	—	Fine clear day	
28	NE	2	53.	43.	48.	67.	29.98	29.96	29.97	—	Fine a.m.; gloomy p.m.	
29	C	1	56.	46.	51.	69.	29.94	29.82	29.88	—	Very fine day	Total Mean ..72.56
30	C	1	58.	44.	51.	74.	29.98	29.80	29.89	—	Very fine sunny day	

OBSERVATIONS.

1. A slight deposition p. m. 3. A fine halo round the moon about 8 in the evening. 5. A very sudden and heavy shower, 7 a.m.; as also about noon. There was no rain in Liverpool till the evening. 6. Aurora about 9 in the evening; some fine streamers: I also observed several falling stars. 7. Thunder p. m., with a little rain. Different strata of clouds appeared to move in various and very opposite directions, some having a very electrical appearance. Wind N.E. and N.N.E. 8. Though the thermometer was up at 54° about 2 p. m., it was nearly stationary the forepart and remainder of the day at $51^{\circ}50$. 9. Showery all day: a beautiful rainbow about $\frac{1}{4}$ past 4 p. m. 13. Very clear evening, with a fine aurora, commencing about 8 o'clock, and increasing in splendour till about 11, when it began to disappear. Several falling stars were also observed, and the river was very luminous. 14. Fine cirri about noon; very comoid and having an electrical appearance. 16. Heavy dew in the night, and misty morning, ending in a very clear warm day. 18. Evening misty. 19. Slight showers towards evening: river luminous. 20. Wind variable, principally from N. and NNW.; rain towards evening. Water very luminous. 21. Showery a.m.; a little hail about 8, and afterwards several showers of rain, but ended in a very fine day. In the forenoon a fine rainbow was observed, which continued to be seen for nearly an hour and a half. The afternoon was very clear; we could distinctly see Beeston Hill and Castle, many miles up the river. About 8 p. m. there was a slight appearance of aurora, which increased in splendour till about 10, at which time some of the streamers were very vivid, but began gradually to decrease in brightness, and had entirely disappeared a little after midnight. River unusually luminous; about ten, the steamers left a complete train behind them, the whole of the wake being beautifully phosphorescent. Having procured a little of the water in a jug, I made several experiments with it. It emits most light on being poured out of one vessel into another in a dark room. I found that by adding a few drops of the strongest solution of ammonia, the luminous property is at first much increased, but is soon entirely destroyed. 23. Cloudy towards noon, with rain. About 5 p. m. there was a beautiful iris duplex, but the secondary arc was very indistinct. 24. Beautiful cirri about noon, after which the clouds gathered and ended in a deposition. 25. Slight showers during the day. 26. Very slight showers at intervals. 28. Fine cirri a. m. In the evening the water in the river was so very luminous that it could be distinctly observed close under the lamps on the Woodside Pier, and each wave had a beautiful appearance as it broke on the shore. Very slight appearance of aurora on the 29th.

TENTH MONTH, (OCTOBER) 1838.

Date.	WIND.		THERMOMETER.				BAROMETER.			Rain.	WEATHER.	RESULTS.
	Course.	Force.	Max.	Min.	Mean.	Sun's Rays.	Max.	Min.	Mean.			
1	NE	0	62.	52.	57.	72.	30.40	30.36	30.38	—	Fine a.m.; fine clear day.	BAROMETER. Max. 3rd 30.54 Min. 17th 29.27 — Total Mean.. 29.90
2	NE	2	59.	48.	53.50	68.	30.54	30.40	30.47	—	Very fine day; brisk wind.	
3	E	1	60.	44.	52.	70.	30.50	30.48	30.49	—	Do. dull p.m.	
4	NW	0	51.	41.	46.	63.	30.50	30.40	30.45	—	Very fine clear day.	
5	C	1	52.	42.	47.	62.	30.48	30.32	30.40	—	Ditto	THERMOMETER. Shade. Max. 10 & 21st 63.00 Min. 13 & 29th 35.00 — Total Mean.. 49.51
6	NNE	0	56.	40.	48.	68.	30.38	30.30	30.34	—	Dull and gloomy all day.	
7	NW	2	57.	46.	51.50	60.	30.38	30.26	30.32	—	Fine day; rather cloudy p.m.	
8	E	1	52.	49.	50.50	62.	30.40	30.38	30.39	—	Cloudy a.m.; clear p.m.	
9	NE	2	55.	47.	51.	68.	30.40	30.32	30.36	—	Fine and clear; dull p.m.	Sun. Max. 10th .. 74.00 Min. 26th .. 58.00 — Total Mean.. 65.72
10	C	2	63.	55.	59.	74.	30.22	30.14	30.18	—	Dull and gloomy; fine p.m.	
11	WSW	4	55.	50.	52.50	72.	29.94	29.67	29.80	.22	Dull and cloudy.	
12	ENE	4	52.	40.	46.	63.	29.54	29.50	29.52	.14	High wind, very stormy.	
13	C	2	43.	35.	39.	59.	29.88	29.62	29.75	.08	Showery all day.	Rain, &c. 4.11 Inches.
14	W	4	51.	40.	45.50	62.	29.82	29.24	29.54	.18	Stormy night; showery day.	
15	W	4	53.	41.	47.	68.	29.62	29.62	29.62	.05	Mild a.m.; very showery.	
16	C	4	56.	46.	51.	64.	29.42	29.30	29.36	.08	Very stormy and wet.	
17	NW	3	54.	48.	51.	69.	29.34	29.20	29.27	.14	Showery and changeable.	Prevailing Winds. S.W. N.W. W.
18	WSW	3	49.	43.	46.	64.	29.82	29.54	29.68	.44	Very changeable.	
19	NW	2	53.	45.	49.	73.	30.00	29.78	29.89	.02	Very fine clear day.	
20	WSW	1	58.	48.	53.	68.	30.08	30.02	30.05	.02	Beautiful day; mild.	
21	SW	1	63.	50.	56.50	75.	30.14	30.08	30.11	.09	Dull and gloomy; very mild.	Ditto. Fine day but cloudy.
22	SE	0	61.	47.	54.	72.	30.04	29.92	29.98	.01	Ditto stormy night.	
23	SSE	2	60.	48.	54.	68.	29.74	29.70	29.72	.21	Dull and cloudy; gloomy.	
24	SW	2	56.	52.	54.	67.	29.70	29.58	29.64	.34	Windy with occasional showers.	
25	C	3	51.	45.	48.	63.	29.90	29.86	29.88	1.04	Fine day, but rather cold.	Ditto. Fine a.m.; dull and cloudy p.m. Showery and cold.
26	WNW	2	54.	46.	50.	58.	29.74	29.68	29.71	.28	Very wet and showery.	
27	C	2	54.	46.	50.	61.	29.62	29.40	29.51	.05	Fine a.m.; dull and cloudy p.m.	
28	SSE	2	49.	43.	46.	59.	29.44	29.40	29.42	.74	Showery and cold.	
29	W	2	47.	35.	41.	62.	29.40	29.30	29.35	.05	Ditto.	Ditto.
30	W	1	52.	38.	45.	64.	29.60	29.54	29.57	.05	Fine day but cloudy.	
31	SSW	1	45.	37.	41.	60.	29.78	29.76	29.77	.05	Fine day but cloudy.	

OBSERVATIONS.

3. Foggy evening, a faint halo. 4. A very dense fog early in the morning, soon cleared up, and afterwards a fine clear day. 5. Dense fog in the morning; soon cleared up. Some appearance of refraction in the atmosphere about noon, the Cheshire coast appearing elevated when viewed from Liverpool, as did also some of the vessels. Wind changeable from NW to NNW. 10. A very slight deposition about noon. Wind W and NNW. 11. Threatening rain all day, but fair, with a very slight deposition at noon. Wind getting up very much towards evening, blowing severely all night with rain. 12. Heavy showers of hail and rain all day: wind very high. A very smart hail shower about noon, which did not reach Liverpool. I happened to be on the Georges Pier at the time, and saw the shower commence over Bidstone,* increasing till it got over Woodside, where it seemed to spend itself. That I might not be deceived I made particular inquiries as to what time the shower had happened at both places, and found it to be exactly correspondent to the time I had observed it, and during which time we had no rain or hail in Liverpool. It is no doubt from the partiality of showers principally, that the great inequality in the measurement given by rain gauges in different places arises. 13. Snow early a. m.; flakes very large and beautiful but did not lay long. This fall of snow appears to have been felt in many places, Birmingham, Leeds, &c. The day was showery, and the wind considerably abated, but variable; it was principally N.W. and N.N.W. 14. Wind very high again, with much rain: stormy night. 15. Fine mild morning; showery; wind rising about noon. Stormy night. 16. Dull with occasional showers. Wind W. and S.S.W. 17. Very stormy. 18. Showery and changeable: barometer very unsteady; high wind towards evening, and in the night. 19. Fine cirri clouds, most of the day; stormy night. 20. Heavy rain in the night with hail. 21. Very close morning; slight shower p.m. 23. A little rain in evening. 24. Slight deposition about noon. 25. Wind from S. to S.W., increasing much in strength. Boisterous night, with rain and hail. 26. Clear evening, cool breeze. 27. Wind S. and S.W.; boisterous night. 28. Rain towards evening, and in the night in torrents with a high wind. 29. Very stormy night. 30. Several beautiful rainbows were to be seen during the showers, one I observed to be double, with the primary bow very vivid; slight halo in the evening. 31. Wind getting up about noon; very high in the night, with much rain and hail.

ELEVENTH MONTH, (NOVEMBER) 1838.

Date.	WIND.		THERMOMETER.				BAROMETER.			Rain.	WEATHER.	RESULTS.
	Course.	Force.	Max.	Min.	Mean.	Sun's Ray's.	Max.	Min.	Mean			
1	NW	3	52.	40.	46.	63.	29.34	29.24	28.29	.43	Dull and gloomy; cloudy.	BAROMETER. Max. 13th....30.18 Min. 29th....28.22 Total mean .. 29.44
2	N	3	50.	41.	45.50	62.	29.09	29.06	29.08	.10	Stormy and wet; rain a.m.	
3	SSE	3	48.	40.	44.	62.	29.06	29.00	29.03	—	Fair; brisk wind p.m.	
4	C	1	46.	38.	44.	63.	30.05	29.94	29.99	.10	Very dull day; foggy.	
5	NE	3	52.	38.	45.	66.	29.34	29.20	29.27	—	Ditto and cloudy.	THERMOMETER Shade. Max. 7th53.00 Min. 27th....29.00 Total mean ..41.00
6	SSE	2	50.	35.	42.50	60.	29.63	29.50	29.56	.08	Wet day; showery night.	
7	W	1	53.	43.	48.	72.	29.38	29.00	29.19	.33	Ditto.	
8	NW	1	52.	46.	49.	59.	29.30	29.27	29.28	.11	Dull and very cloudy.	
9	NW	0	50.	44.	47.	56.	29.70	29.62	29.66	.04	Ditto with rain.	Sun. Max. 7th72.00 Min. 27th49.00 Total mean ..60.00
10	NW	0	46.	40.	43.	60.	30.00	29.92	29.96	.09	Ditto	
11	C	1	42.	38.	40.	68.	29.34	29.22	29.28	.03	Very dull and foggy.	
12	NE	1	40.	32.	36.	54.	29.50	29.40	29.45	—	Fine day but very cold.	
13	C	2	42.	31.	36.50	59.	30.18	30.14	30.16	—	Foggy; keen frost in night.	Rain, &c. 3.13 Inches. Prevailing Wind. S W
14	S	0	39.	33.	36.	55.	29.88	29.74	29.81	—	Ditto very cold.	
15	SE	0	41.	37.	39.	62.	29.90	29.81	29.85	—	Thick foggy day.	
16	C	1	49.	39.	44.	63.	29.68	29.58	29.63	.02	Ditto rain in night.	
17	C	1	51.	37.	44.	59.	29.74	29.62	29.68	—	Dull and very foggy.	Rain, &c. 3.13 Inches. Prevailing Wind. S W
18	E	3	42.	38.	40.	62.	29.72	29.72	29.72	.04	Ditto showery p.m.	
19	E	2	41.	37.	39.	63.	29.60	29.52	29.56	.03	Ditto	
20	SE	1	42.	34.	38.	65.	29.64	29.64	29.64	—	Gloomy day; aurora 8 p.m.	
21	ESE	0	43.	37.	40.	59.	29.48	29.44	29.46	—	Ditto foggy p.m.	Sun. Max. 7th72.00 Min. 27th49.00 Total mean ..60.00
22	E	0	42.	36.	39.	58.	29.26	29.22	29.24	—	Dull and gloomy; fine p.m.	
23	ESE	1	45.	37.	41.	60.	29.53	29.53	29.53	.23	Ditto	
24	ESE	1	40.	36.	38.	59.	29.90	29.68	29.79	—	Cloudy and dull.	
25	ESE	1	36.	32.	34.	58.	29.78	29.70	29.74	—	Fine clear day; very sharp.	Rain, &c. 3.13 Inches. Prevailing Wind. S W
26	C	2	40.	32.	36.	58.	29.78	29.72	29.75	—	Dull cloudy day.	
27	ESE	1	37.	29.	33.	49.	29.22	29.10	29.16	.39	Ditto and wet.	
28	SSE	3	42.	35.	38.50	58.	28.70	29.54	28.62	.40	Very wet and st rmy.	
29	WSW	3	50.	40.	45.	64.	28.24	28.20	28.22	.48	Much rain all day.	Sun. Max. 7th72.00 Min. 27th49.00 Total mean ..60.00
30	WNW	3	47.	37.	42.	56.	28.04	28.68	28.81	14	Very dull and showery	

OBSERVATIONS.

1. Very heavy rain in the night, with hail. 2. High wind in the night, and very wet; a severe shower of rain and sleet, a. m. 3. A very slight deposition towards evening. 4. Wind very variable, E., S. E., E. S. E. Rain in the night. 5. A very fine halo round the moon, 8½ p. m. 6. Very cold and piercing wind, and mist through which the sun did not entirely penetrate. Had it not been for my observing friend, R. Tudor, of Bootle, I should have missed seeing a beautiful solar halo, which occurred about 2 p. m., continuing for about an hour. It was similar in appearance to a lunar halo, with the exception of its having a more ruddy or dark appearance. Solar halos are of very rare occurrence in this country, but are more frequent in high northern latitudes. 7. River very luminous. 8. Dense fog, a. m.; clear after half past. 9. Rain in the night. 10. River very luminous. 11. Wind during the day, S., S. E., E. S. E.; a shower of rain with sleet, a. m., afterwards fair. 12. A fine aurora in the evening, about half past 8. Mr. Tudor observed a large number of falling stars later on. It appears that these falling stars make their appearance regularly on this date. They were observed elsewhere in very great abundance, (see General Retrospect.) 13. Wind variable, W., S. W., S. S. W.; a fine halo in the evening. 16. Wind W. a. m.; p. m. W. N. W. 17. Wind changeable from E. to S. E. all day. 18. A fine rainbow, during a shower, about noon, and several less vivid ones during the day. 19. Fair; rain towards evening. 23. Rain towards evening; showery night. 24. Fine coronna, 8 p. m., and slight appearance of aurora; shooting stars. 25. Sharp frost in the night; several falling stars about 10 p. m. 27. Heavy shower of rain and sleet about noon. 29. Barometer fell suddenly, and is very low; brisk wind during the day, and boisterous night, with rain. Several rainbows during the intervals of showers. 30. Brisk wind, very gusty, but mild; barometer looking up.

Date	WIND.		THERMOMETER.				BAROMETER.			Rain.	WEATHER.	RESULTS.
	Course.	Force.	Max.	Min.	Mean.	Sun's Rays.	Max.	Min.	Mean.			
1	SW	1	54.	46.	50.	60.	29.40	29.30	29.35	.14	Showery; dull and gloomy.	BAROMETER. Max. 31st....30.50 Min. 2nd....29.15 — Total Mean..29.98
2	WSW	3	54.	46.	50.	58.	29.15	29.05	29.10	.10	Brisk wind; dull day	
3	SW	3	47.	43.	45.	54.	29.28	29.19	29.23	.03	Showery with a fine breeze.	
4	NW	2	49.	45.	47.	63.	29.52	29.42	29.47	.42	Heavy shower p.m.; rain in the night.	
5	NW	2	46.	40.	43.	69.	29.98	29.90	29.94	—	Cloudy; occasional gleams of sunshine	THERMOMETER Shade. Max. 1st&2nd54.00 Min. 17th....30.00 — Total Mean..40.83
6	S	1	48.	36.	42.	64.	30.20	30.08	30.14	—	Foggy; slight corona p.m.	
7	NW	2	43.	39.	41.	68.	30.28	30.22	30.22	—	Dull and gloomy.	
8	NNW	1	46.	40.	43.	63.	30.36	30.36	30.36	—	Mostly dull; fine at intervals.	
9	SW	1	39.	33.	36.	45.	30.34	30.34	30.34	—	Very cold; gloomy and dull.	Sun. Max. 5th.....69.00 Min. 18th....42.00 — Total Mean..50.20
10	WNW	0	42.	34.	38.	54.	30.20	30.20	30.20	—	Dull and gloomy; cold	
11	C	0	45.	39.	42.	52.	30.30	30.24	30.27	.34	Fair; rain in the night; dull day.	
12	W	0	46.	40.	43.	63.	30.22	30.22	30.22	—	Very dull and gloomy.	
13	SW	1	46.	42.	44.	62.	30.24	30.20	30.22	—	Fine day but cloudy.	Rain, &c. 1.34 Inches.
14	SE	2	46.	40.	43.	52.	30.44	30.40	30.42	—	Ditto. cool air.	
15	S	1	44.	40.	42.	54.	30.40	30.34	30.37	—	Dull and gloomy.	
16	SE	0	33.	31.	32.	49.	30.34	30.34	30.34	—	Very dense fog all day.	
17	C	0	36.	30.	33.	51.	30.32	30.29	30.30	—	Dull and gloomy; milder.	Prevailing Wind. NW.
18	SE	2	39.	33.	36.	42.	30.20	30.16	30.18	—	Ditto rather foggy.	
19	WSW	1	47.	40.	43.	47.	30.22	30.22	30.22	—	Fine day but cloudy.	
20	SW	1	44.	40.	42.	47.	30.26	30.20	30.23	.02	Shows a.m.; rain in the night.	
21	S	2	38.	32.	35.	55.	30.30	30.20	30.25	—	Dull a.m.; fine and clear p.m.	Rain, &c. 1.34 Inches.
22	S	2	43.	34.	38.	54.	30.10	29.83	29.97	.03	Showery a.m.; dull day and cloudy.	
23	S	3	46.	36.	41.	46.	29.53	29.40	29.46	.06	Rough day; rain in the night.	
24	ESE	2	42.	36.	39.	53.	29.52	29.40	29.46	—	Fair, but threatening rain.	
25	ENE	2	35.	31.	33.	52.	29.78	29.54	29.66	—	Very fine a.m.; dull p.m.	Prevailing Wind. NW.
26	S	2	40.	32.	36.	44.	29.54	29.44	29.49	.06	Dull and gloomy; showers.	
27	NW	3	39.	33.	36.	43.	29.72	29.64	29.68	—	Wind in gusts; dull day.	
28	NW	2	44.	38.	41.	49.	30.26	30.22	30.24	—	Very fine clear day.	
29	NW	3	50.	38.	44.	62.	29.99	29.92	29.96	—	Dull day and gloomy.	Prevailing Wind. NW.
30	C	3	50.	42.	46.	68.	29.96	29.90	29.93	.14	Fine a.m.; showery p.m.	
31	WNW	2	44.	38.	41.	64.	30.50	30.42	30.46	—	Fine day; rather cloudy.	

OBSERVATIONS.

1. A very fine halo discoides in the evening. 4. Much rain early a. m. 6. A corona in the evening, with slight appearance of aurora. 8. River very luminous; some falling stars were observed late on in the night. The weather is very dull and gloomy, but mild. 9. Very cold day, and frosty night; much hoar frost observed in the country. There must have been a shower of rain in the night, as trees and shrubs are beautifully encrusted with ice, presenting a very glittering appearance in the morning sun, which soon, however, deprived them of their shining garments. 11. A very fine aurora, commencing about half past 10, p. m.; some of the streamers exceedingly grand and beautiful. I noticed a large meteor near the tail of the Great Bear. About two o'clock, on the morning of the 12th, the streamers had nearly entirely disappeared. 14. Wind high in the night; abated before daybreak. 16. Very cold and piercing wind; fog clearing towards evening. 17. A very fine, clear, frosty night. 23. Showery in the night. 24. Stormy. 25. A charming day, very mild. Numerous falling stars were observed the forepart of the night, afterwards cloudy. 26. Sleet and snow in the morning, with the rain freezing on the ground as it fell. 28. Rather cloudy towards evening, with a very fine halo discoides. The clouds moving at an amazing rate. 29. A slight shower in the night; very mild day, though rather foggy in the morning, clearing up p. m. 30. A very mild and genial day, more resembling spring weather. The heavy shower in the afternoon was accompanied with a little hail. A fine halo triplex in the evening; river very luminous; the appearance of the breakers on the shore was very beautiful.

MONTHLY RESULTS, &c.

OF

METEOROLOGICAL OBSERVATIONS, MADE AT WOODSIDE, CHESHIRE, 1838,

BY

WILSON ARMISTEAD.

Months.	WIND.	TEMPERATURE.								PRESSURE.				NO. OF DAYS.						
		In Shade.				In Sun.				Mean.	Max.	Min.	Range.	Rain, &c.	Rainy.	Fair.	Fnie.	Foggy.	Hail.	Snowy.
		Mean.	Max.	Min.	Range.	Mean.	Max.	Min.	Range.											
I	SE	31.47	50.	11.	39.	—	—	—	—	29.87	30.48	29.28	1.20	.70	5	26	16	5	0	3
II	SE	33.26	48.50	21.	27.50	—	—	—	—	29.50	30.40	28.20	2.20	1.15	9	19	7	6	0	4
III	S W SW	40.69	54.	30.	24.	—	—	—	—	29.75	30.52	29.02	1.50	1.21	9	22	9	9	1	2
IV	N	43.13	61.	26.	35.	—	—	—	—	29.80	30.10	29.20	.90	1.84	11	19	17	1	2	1
V	N SE	49.63	68.	35.	33.	72.66	97.50	53.	44.50	29.86	30.40	29.30	1.10	1.84	14	17	16	0	0	0
VI	NW N	56.10	71.	44.	27.	77.91	93.	60.	33.	29.77	30.18	29.45	.73	4.62	10	20	18	2	0	0
VII	NW SW	60.43	75.	50.	25.	76.96	90.	66.	24.	29.92	30.28	29.55	.73	3.07	13	18	16	0	0	0
VIII	NW SW	58.96	72.	48.	24.	75.	84.	68.	16.	29.83	30.20	28.98	1.22	4.11	15	16	12	0	0	0
IX	NW	54.98	69.	42.	27.	72.56	81.	67.	14.	29.92	30.48	29.06	1.42	2.07	5	25	16	1	1	0
X	SW NW W	49.51	63.	35.	28.	65.72	74.	58.	16.	29.90	30.54	29.27	1.27	4.11	14	17	12	2	5	1
XI	SE	41.	53.	29.	28.	60.	72.	49.	23.	29.44	30.18	28.22	1.96	3.13	13	17	2	11	0	0
XII	NW	40.83	54.	30.	24.	50.20	69.	42.	27.	29.98	30.50	29.15	1.35	1.34	8	23	9	3	0	0
Means, &c.		46.66	75.	11.	64.	—	—	—	—	29.79	30.54	28.20	2.34	29.19	126	239	150	40	9	11
Mean Pressure, 29.79.		Temperature in shade, 46° 66.								Fall of Rain, 29.19 in.				Prevalent Winds, N.W.						

MONTHLY SUMMARIES OF THE WEATHER, AS
OBSERVED AT WOODSIDE, 1838.

I. Month, January. A very severe winterly month, with much hard and continued frost. The Thermometer has stood lower than it has been observed to do for many years, viz. 11° , though this is not so great a degree of cold as was experienced at many places elsewhere about the same time, as will be seen from the statements in the General Retrospect. The nights, with the exception of three, have been all frosty, and the frost has generally continued during the day, more or less intense. The fall of snow has been trifling. There were slight appearances of Aurora on the 11th and 27th; many shooting stars were also observed on the 11th. A few days at the commencement of the month were very mild, the Thermometer being at 50° , on the 3rd and 4th. Dense fogs have been frequent.

II. Month, February. A frosty, dull, and gloomy month, often very foggy. Only seven days can be said to have been fine. The Winds have been very cold, principally from S.E., having blown from that quarter or near it for sixteen days in succession. The showers of snow have been frequent, but the quantity fallen has been trifling. Two remarkably sudden depressions have taken place in the Barometer, viz.: from the 4th to the 9th, when it got down from $30^{\circ} 40$ to $28^{\circ} 22$, and rose again rapidly. On the 18th and 19th it stood at 30° ; on the 20th, it got down to $29^{\circ} 54$; and rising a little on the 21st, it again turned round and by the 28th it had got down to $28^{\circ} 20$, a depression which has not been witnessed for many years. It is remarkable that this sudden depression was unaccompanied with much wind and very little rain. The Aurora has occurred once, and a halo triplex on the 15th, being of rare occurrence, deserves notice.

III. Month, March. Dull and gloomy, with a few fine days at intervals; some days very foggy, and though warmer than the preceding month, very severe. Heavy gales have been frequent. The barometer has been very unsteady, and the winds variable with sudden showers. There have been two showers of snow, but the fall was light. The Aurora has occurred three times, accompanied with falling stars on the 6th. Nine days have been foggy. Vegetation has hardly

begun to make any appearance. The only plants I have noticed in flower are *Bellis perennis*, *Galanthus nivalis*, *Daphne Mezereum*, *Coryllus Avellana*, and a few varieties of *Crocus*.

IV. Month, April. A cold ungenial month, with boisterous northerly winds and frequent sharp frosts; unusually cold and bleak for the season. Vegetation is very backward, and there is but little appearance of Spring yet. There was snow as late as the 19th. The Barometer has been very unsteady, the range having been nearly half-an-inch on three occasions, with high winds, which have done much damage to the shipping of the port. In spite of the coldness and inclemency of the season I have counted twenty-nine spring plants in flower; and the Swallow, "the welcome messenger and herald of Spring," has made his appearance, having been observed by R. Tudor, at Bootle, on the seventeenth. The blossom buds of fruit trees are much nipped by the frequent frosts in the nights, at the commencement and a little after the middle of the month.

V. Month, May. Although the mean temperature of this month is almost 7° higher than the last, for the time of year the weather has been very cold and bleak, and vegetation in consequence is very much retarded, though the last few warmer days in the month, with the previous rains and heavy dews, have made a wonderful alteration for the better in the aspect of the country. Frost was noticed as late as the 14th. But few additional plants have been observed in flower. I heard the Cuckoo on the 6th, and R. Tudor informs me that he heard the Landrail (*Galleula Crex*) at Bootle on the 4th, and saw the Swift (*Hirundo Apus*) the same day; also heard the Cuckoo and saw the Blackcap at Ince on the 3rd.

VI. Month, June. Cold, with much rain in heavy showers, and very unseasonable for the time of year. Out of the 4° 62 in. of rain this month, nearly one-fourth fell on the 18th, and that within an hour. On the 3rd, 11th and 19th there was also much rain. Thunder and lightning occurred on the 13th and 18th. A singular phenomenon occurred on the 18th, which is particularised in the remarks for the month; it consisted of an *Iris duplex*, and an upright column exhibiting the prismatic colours. The Barometer has been pretty steady. I have observed 132 plants in flower, besides a few observed last month. Fires are still to be seen in many of our parlours, for though the temperature has often been high, the northerly winds have been piercing and cold.

VII. Month, July. A showery month, and often very cold. The Barometer has fluctuated a good deal, though the range has been trifling, and the rains have been very frequent but not heavy, with one

exception. However interesting to the Meteorologist the peculiar state of the weather may be, it is now become very serious to the agriculturist. A large portion of hay grass yet remains uncut, and the hay that is unhoused has suffered much from the rain, as also the crops of grain. Fruit ripens slowly. Rainbows were observed on the 12th, 20th, and 29th; a little thunder on the 6th. I observed a curious refractive phenomenon on the 5th, which is particularised in the observations after the table for this month. In addition to the number of plants observed last month I can now add 150; making 282 species now in flower.

VIII. Month, August. Cold, rainy and ungenial; very changeable, with a few fine days at intervals. Nearly half the days in the month have been rainy, and very unfavourable to the agriculturist, the grain in this neighbourhood being all out yet, and most part of the hay. With the exception of three S.E. winds, westerly winds have prevailed. Autumn seems fast approaching; of Summer weather we can boast none this year so far. I have observed 46 additional species of plants in flower, and several *Fritillaries* and other Insects on sunny days, which have been few.

IX. Month, September. The early part of this month was rather wet and showery, but towards the middle and latter end, though cooler, we have had a succession of fine, clear, open weather. The hay was nearly all housed in the beginning of the month, and a good deal of grain is now gathered in, in this part of the country. All nature wears an autumnal garb, and the varied tints of foliage are beautiful. Besides being favourable to the farmer, this month has been full of interest to the Meteorologist in the occurrence of phenomena. A rainbow was seen on the 9th; on the 21st, one was observed great part of the morning; and a double one on the 23rd. A fine Halo was seen on the 3rd. Thunder was heard on the 7th. Falling stars were noticed on the evening of the 6th, and the *Aurora Borealis* on the nights of the 6th, 13th, and 29th. The River has also been unusually phosphorescent. Few plants are now in flower.

X. Month, October. With the exception of a few days at the commencement, the weather during this month has been very changeable, with much rain, and some very high winds, which, from their violence, have done considerable damage. As is generally the case in tempestuous weather, the Barometer has varied much; on the 14th upwards of half-an-inch in eleven hours. I have only been able to insert eleven plants in my Calendar of Flora, not including Cryptogamic Species. The month has been rather uninteresting for want of phenomena. There was a slight snow shower on the 13th, early a.m.

XI. Month, November. A characteristic month in every respect; dull, cloudy, showery, cold, and gloomy, with a little frost in the nights occasionally. The Barometer has been very variable, and on the 29th it got down to $28^{\circ} 22$; a depression which has not been observed for many years, with the exception of the 28th of last second Month, when it was as low as $28^{\circ} 20$. There were brisk winds and a good deal of rain about the time of this depression. The Aurora was observed on the 12th and 24th; falling stars on the 12th, 24th, and 25th; and several rainbows have also been seen, as well as lunar halos, and a fine solar halo, of which particulars will be found in the remarks for this month. Eleven days have been foggy.

XII. Month, December. This month, though dull and gloomy, has proved very generally open and mild, so that the fields in the country have put on quite a vernal livery. The rains have been light, and have mostly fallen in the night. Halos and coronæ have been frequent, and the Aurora was noticed very fine on the 11th, and less vivid on the 6th. Falling stars have also been observed. Frosts have occurred occasionally in the nights, and we have had a few showers of sleet and hail, but on the whole the month must be considered mild and open.

Temperatures of the River Mersey.

The following is a list of maxima and minima temperatures of the river Mersey, during nearly five months of 1837, and four months of 1838, extracted from a register kept at the Floating Bath, under the superintendence of the proprietor, T. H. Coglan, Esq. The observations were made four times each day, viz. six and twelve, a. m.; and four and eight, p. m.

1837.	1838.
MAY.	MAY.
Max. 53° often.	Max. 56° 31st.
Min. 48° 15th.	Min. 51° 25th.
Only registered from the 14th.	Only registered from the 24th.
JUNE.	JUNE.
Max. 64° 50—29th and 30th.	Max. 62° 30th
Min. 52° —1st, 2nd and 3rd.	Min. 54° 1st.
JULY.	JULY.
Max. 65° 50—15th.	Max. 64° 6th, 7th, and 9th.
Min. 63° often.	Min. 60° often.
AUGUST.	AUGUST.
Max. 66° 18th and 20th.	Max. 62° often.
Min. 59° 50 31st.	Min. 59° 25th and 26th.
SEPTEMBER.	SEPTEMBER.
From 57° to 59° to the 10th.	Not registered.

These observations are very interesting, but would be much more so were they continued through the year. In order to accomplish this, I have got a thermometer made of a peculiar construction, which, with the kind assistance of Dr. Stevenson and Mr. M'Donald, I am about to have fixed at the 'Redbreast,' the Officer's vessel belonging to Her Majesty's Quarantine vessels, stationed a short distance from shore, nearly opposite the New Ferry. The observations will be made three or four times each day, taking the temperature of the air at the same time,

As the instrument is rather a novel one, I have annexed a drawing of it, which will show its construction, better than I can describe it in words. It is about a yard in length; the body is made of well seasoned wood, with a hole bored down the centre, in which is inserted the glass tube containing the mercury, the whole being cased with a strong copper sheath, for protection, to the height of the scale. The bulb is about two inches from the apex, where a few small holes are pricked that the water may find an ingress, and thus produce more correct indications. It will be immersed half a foot or more in the water, as may be found most convenient. Both thermometers are very correct, being made and adjusted by L. Cassartelli, of Liverpool.

Effects of the Winter of 1838, on Vegetation, in the Neighbourhood of Woodside and Liverpool.

As the effects of severe seasons are most particularly marked in the vegetable world, nothing can afford a better criterion for judging of the state of the weather during any particular season, than an observance of the effects produced on various vegetable productions. It may not therefore be irrelevant to the present subject to take a review of such plants as were observed to be affected during the severity of last winter, in this neighbourhood, as also of those which apparently sustained little or no injury.

This idea was first suggested to me on reading a very interesting communication from H. C. Watson, in "The Naturalist," a few months ago, entitled "Effects of the winter of 1838 on vegetation in the neighbourhood of Thames Ditton, Surrey:" which contains a list of plants, with the various effects produced on them during that severe season.

I may here also mention the kind assistance I have received from my friend Henry Shepherd, Curator of the Liverpool Botanic Garden, who has furnished me with an elaborate list of plants, containing particulars of the effects produced on them at that extensive establishment; for which the interest of the following pages is particularly indebted.

1. Killed entirely. On a wall at the Botanic Garden, having a southern aspect. *Polygonum adpressum*, *Dryophyllum Lanceo-*



Sketch of a
THERMOMETER
for

ascertaining the
TEMPERATURE
of Water.

Reduced to one eighth the real size.

latum, *Acacia decurrens*, *Cistus Lusitanicus*, *Rosa Indica lutea*, *R. Multiflora alba*, *R. Austriacum*, *Andromeda Ferruginea*, *Rapheolipis Indica*, *Bupleurum Gibralticum*, *Ceanothus Cæruleus*, *C. Azureus*, *Lycium Spathulatum*, *Pisonia Hirta*, and *Physianthus Undulatus*. In the open borders: *Daphne Collina fl. varieg.*, *D. Pontica*, *D. Gnidium*, *Ulex Europæus fl. plen.*; it is remarkable that some plants of this species were entirely killed, whilst others in the immediate neighbourhood and equally exposed, were not in the least affected. Plants of the same species at Woodside escaped any material injury. *Ulex Stricta*, *Ribes Speciosa*. On a wall aspect east: *Escallonia Spectabile*, *E. Montavidiensis*, *Lonicera Longiflora*, *Medicago Arborea*, many species of *Cistus*, *Rhamnus Clusii*, *Euphorbia Alepica*, *Lavatera Olbia*, *Eccremocarpus Scabra*, *Genista Italica*, *G. Canariensis*, *Myrsine Bifaria*, *Itea Cyrella*, and *Clematis Florida*. Amongst the plants destroyed in the neighbourhood of Woodside may be mentioned *Reseda Fruticulosa*, common Myrtles, Stocks, and Wall-flowers. One hundred varieties of *Dahlia*, consisting of about 500 roots, placed in a tool-house in the Square-garden, and covered with seven good mats, all perished. H. C. Watson in his list mentions *Fuchsia Globosa*, and *F. Coccinea*, and the *Cistus Ladaniferus* as having been destroyed there; whereas in this neighbourhood they only suffered as usual, the *Fuchsias* dying down to the roots, and the *Cistus* parting with its leaves. This need not however at all surprise us, when we consider the much greater degree of cold which was experienced in the southern counties, than in this part and more northward. At the Horticultural Society's Gardens, it appears the thermometer was 4° below zero; here and in Liverpool it was never lower than 11° above zero. It is worthy of remark that potatoes in low damp fields were destroyed, whilst those on more elevated situations were mostly preserved. Turnips were similarly affected.

2. Destroyed to the roots. On a wall at the B.G. aspect southern: *Rosa Indica sanguinea*, since grown very rapidly, *R. multiflora*, *R. Bracteata*, *Euonymus Echinatus*, *E. Sarmentosus*, *Lycium Obovatum*, very healthy since, *Acacia Aderans*, *Hovenia Nepalensis*, and *Clematis Balearica*. Eastern aspect: *Sterculia Platanifolia*, *Andromeda Acuminata*, *Smilax Purpurata*, *Dorychnium Monspelienense*, *D. Latifolium*, *Heimia Salicifolia*, *Escallonia Rubra*, *Solanum Crispum*, this has since shot up very strong and healthy, *Wistaria Frutescens*, *Nissa Lævigata*, *Ducumaria Barbarea*; and in the open borders, *Aristotelia Macquii*.

3. "Destroyed excepting the roots or main stems." *Prunus Laureus* in many instances, and *Arbutus Unedo* in some exposed situa-

tions; *Daphne Oleæfolia*, *D. Tartonraira*, *D. Pontica rubra*, *D. Neapolitana*, *Fuchsia Gracilis*, *F. Conica*, *F. Globosa*, *F. Coccinea*, *F. Tenella*, and *F. Excorticata*, a new species from New Zealand. It may be useful information to those who are desirous of protecting and preserving their tender shrubs in open ground as much as possible during the inclemency of the winter months, that nothing affords a better protection against the effects of frost than bog earth; so that to whatever height it is placed round any shrub, up to that mark it will take no harm, though the frost may penetrate through and through. This is Mr. Shepherd's information.

4. "Leaves and young wood destroyed; larger branches and stems more or less injured." *Juglans Regia*, all the young wood of last year's growth destroyed, *Laurus Tinus*, *L. Nobilis*, *Rhododendron Arboreum* hybr., *Edwardsia Chrysophylla*, *E. Microphylla*; Common Holly, exposed to N.E., was very much cut up, in other situations it did not suffer much; *Viburnum Tinus*. Some plants of *Ribes Sanguineum* at the Botanical Garden suffered extremely, most of the branches being entirely destroyed; other plants of the same kind, situated at no great distance, and apparently having the same disadvantages as their congeners, were hardly affected at all, and some not in the least injured. A small plant of *Buddlea Globosa*, at the B. G. was nearly destroyed. A large tree of the same, in the Square Garden, Woodside, sustained less injury, as did also one in our own garden, having a little of the most recent wood destroyed, and being deprived of their leaves, which they have hitherto retained all winter. Though they have generally flowered profusely, there was not a single flower to be observed on either last summer.

5. "Leaves, buds, or young wood partially destroyed." *Spartium Junceum*, *Corchorus Japonica* leaves only, *Rosa Macrophylla*, *Deospyros Lotus*, *Dutzia Stamina*, *Viburnum Rugosum*, *Arbutus Procera*, and *Photinia Serrulata*, the two last leaves only. The young flower buds of the *Rhododendron Ponticum* must have been destroyed, as they produced very few flowers in the summer; some none.

6. "Scarcely injured in foliage or branches." *Rosa Banksia lutea*, *R. Fabii*, *Fontanesia Phylliræoides*, all on the S. wall, B. G. *Clematis Tridentata*, *Ribes Speciosa*, *Edwardsia Grandiflora*; a new species of *Edwardsia*, from Chili, suffered none. A *Hydrangia Hortensis* in our garden flowered profusely in the summer, and attempted to flower again; but, owing to the cold damp weather,

and want of sun, the flowers were entirely green. They had previously a deep blue tinge.

7. Suffered none at all. It would have almost been useless to have given a list of these plants, had we experienced a temperature as low as was felt elsewhere, as it would not have been reasonable to expect they should have perished in other localities, under similar circumstances. I question, however, whether so long a list of plants could be collected, of similar habits, from any other place not having sustained any injury. This list may also prove useful to those who may wish to know what plants will endure our winters, and what will not stand them, as none of them will suffer in a general way. Against a S. wall, *B. G. Citharexylum Inermis*, *Schizandra Coccinea*, *Peptanthus Nepalensis*, *Cistus Ladaniferus*, *Garrea Elliptica*, *Eriobotrya Japonica*, *Clematis Montana*, *C. Odorata*, *Rosa Zellowi*, *R. Indica alb.*, *Lycium Chinense*, *L. Carolinianum*, *L. Trewianum*, *Euonymus Americanus*, *E. obovatus*, *E. Pallidus*, *E. Nanus*, *E. Hamiltonia*, *E. Japonica*, fol. var. arg., *Acacia Julibrissin*, *Edwardsia Macrophylla* in one situation, *Colletia horrida*, *Hydrangea Quercifolia*, *Dutzia Scabra*, *Desmodium Pendulum*, *Duvaua Dependens*, *Jasminum Wallichia*, *J. Fruticans*, *Phillyrea paniculata*, *Caprifolium Chinense*, *C. Fraserii*, *C. Flavum*, *C. pubescens*, *Chimonanthus Luteus*, *Maclura Aurantiaca*. Eastern Wall: *Clematis Reticulatus*, *C. Glauca*, *C. Lathyrifolia*, *Solanum Littorale*, *Lonicera pubescens*, *L. Parviflora*, *Cistus Ladaniferus*, *C. Laurifolia*, *C. Populifolia*, *Lomatia Longifolia*, *Prunus Cartilaginea*, *Anoda Triloba*, *Collita Ephedra*, *Menispermum Canadense*, *Daphne Collina*, *D. Collina hybr.* In the open ground *Andromeda Floribunda*, *Artemisia Pro-cera*, and several *Rhododendrons*. About Woodside may be mentioned *Cistus Ladaniferus*, many species of *Erica*, *Aucuba Japonica*, *Tamarix Gallica*, *T. Germanica*, *Cytisus Albus*, *Azalea Coccinea*, *A. Alba*, *A. Pontica*, *A. Chrysolecta*, *Thuja Occidentalis*, some plants of *Eulex Europæus fl. plen.* The various species of *Azalea* did not suffer more than usual at the B. G.

This list might be much extended, but as most plants and shrubs which have not been mentioned are considered hardy, it is unnecessary to enumerate more. It would be interesting if authentic lists could be drawn up, of the effects of particular seasons on vegetation in various localities; and, as H. C. Watson observes, "If these reports were collected together, much valuable information might be obtained, for the purposes of the botanical geographer, the vegetable physiologist, and the practical gardener."

A General Retrospect of the Weather, and Account of Meteorological Phenomena observed in 1833.

HAVING already trespassed so much beyond the limits of this useful little work, which will be in a great measure locally interesting, some apology may be deemed necessary before introducing a subject which will often extend its remarks to places and appearances so very remote. As, however, the past year presents us with so many peculiar features and remarkable occurrence of phenomena, it is presumed that a general retrospect of the weather cannot but prove interesting to most of the purchasers of this publication; and I only wish that some one, more qualified for it than myself, had undertaken the task.

It is not my intention to bring forward any hypotheses; but merely to give a statement of such facts as have come to my knowledge, which have been collected from various sources; principally from correspondents, and reference to periodical publications and newspapers, as well as my own observations in this immediate vicinity.

The additional expense incurred in printing of these remarks, has not been allowed in the least to increase the price of the "Flora;" so that, to the reader who is uninterested on this subject, any further perusal is entirely optional with him. I trust, however, there are few of this description, as there appears to be a growing interest in the study of meteorological phenomena, a circumstance by no means astonishing, when we consider their great importance to the agriculturist and mankind in general; for, though we are not able to alter the laws of Nature, yet, by anticipating some of its most terrible convulsions, we may be enabled to guard ourselves or our property from their effects. "There is scarcely any subject in which mankind feel themselves more interested than in the state of the weather; that is, in the temperature of the air, the influences of wind, rain, &c. It forms a principal topic of conversation. By the weather the traveller endeavours to regulate his journeys, and the farmer his operations; by it plenty and famine are dispensed, and millions are furnished with the necessaries of life. It is intimately connected with the health of the human body, with every part of Natural His-

tory, and particularly with Agriculture." Great interest is also excited in many of the most beautiful atmospheric phenomena, as Clouds, Rainbows, Aurora Boreales, Halos, Meteors, Ignis Fatui, Mirage, &c. There are also other phenomena, which, besides affording much interest, inspire us with wonder and reverential awe. Of these phenomena, Thunder and Lightning are of the most frequent occurrence, and their effects are sometimes the most terrible. Thunder-storms are often the grandest displays in Nature, and have often been described as "God's artillery." It is when the awful peals of thunder burst over his head, and the vivid lightnings from all the quarters of heaven flash before his eyes, that the Atheist turns pale, and the guilty conscience is aroused, and trembles with a mixture of fear and horror, lest an offended and avenging God should execute his speedy vengeance upon him. But how differently is one of a truly religious and philosophic mind affected. He has no fear, but is filled with admiration towards that Great and Adorable Power which alone could produce such magnificent effects. He knows that the conflicting elements are under the control of an All-wise, All-powerful, and Beneficent Being, who governs and regulates the whole in such a manner as is most conducive to His great design; and who, in His inscrutable wisdom and goodness, keeps all things within proper bounds; so that the great works of the Universe are carried forward with that regularity and harmony which bespeak the overruling care of a Supreme Contriver, and a Divine Architect.

Before commencing the summary for the past year, I may allude to the remarkable mildness of the weather a short time previous, viz. the last month or six weeks in 1837; which, though generally wet and stormy, was unusually mild and genial for the season; and there was nothing in its appearance from which any one could have augured the very intense and continued frost which almost immediately succeeded. This mildness appears to have been by no means local, as I have received accurate accounts and meteorological diaries from Montreal, and other places as remote, all concurring as to the very open and mild state of the weather towards the latter end of 1837. The following is an extract from the Annual Report for 1837, published in Montreal, from the observations made by John M'Cord, who has kindly furnished me with it, and other very interesting reports. "Nov. 30th to Dec. 13th—Extraordinary mild season—warm rains—navigation open—steamers plying to the 13th Dec. inclusive." After this time a severe frost set in. In Nov. the

maximum temperature was $+49^{\circ}$, and the minimum $+2^{\circ}$; and in Dec. the maximum was $+45^{\circ}$, and the minimum -14° . I am not yet in receipt of the accounts subsequent to this period. The following extracts from various periodical publications and newspapers, published towards the end of December, will give some idea of the mildness of the weather nearer home. "In the last week in December, a strawberry, fully ripe, was gathered in the garden of Mr. John Holme, West Derby."—*Preston Observer*. "As a proof of the mildness of the season, a gooseberry-bush in the garden of Mr. Bothwell, Greenbank, is covered, not only with buds, but exhibits some well-formed berries. Many of the bushes in the garden are in the same state."—*Aberdeen Herald*. "A robin's nest, with four eggs, has been recently discovered in a flue, in the County Lunatic Asylum."—*Bedford Beacon*. "A whin-chat's nest, with twelve eggs in it, was found on Carrock-fell on Christmas-day. Cowslips were, last week, plucked in the neighbourhood of Norton, Yorkshire; and a fig-tree, at the Lord Seaham Inn, near Hartlepool, is now bearing fruit, being the third crop. A Salisbury correspondent of a local paper relates that, whilst walking in his garden, on Christmas-day, he observed a very beautiful yellow butterfly, as full of activity as in the month of June."—*Doncaster Gazette*, Jan. 5, 1838. Many similar instances might be recorded, but what has already been brought forward will sufficiently prove the unusual mildness of the weather, during the latter part of 1837. This mildness continued for a few days in January, 1838, the thermometer varying from 40° to 50° , and even higher, in this country. But this state of the weather, however, soon took a turn, and a hard and continued frost set in, which continued with greater or less severity to the end of February, and occasional frosts were observed in some parts of the country, during the night, even as late as June! The weather in January was, in general, pretty fine and clear, and there were heavy falls of snow in some parts, so as to prevent travelling; this was more particularly the case on the continent. The canals were all frozen, and many large rivers were frozen so thick as to allow carts and other heavy vehicles to pass along them. The greatest degree of cold appears generally to have occurred on the 20th, but there are, however, some exceptions, as the annexed table will show. The greatest exception seems to have occurred at Kendal, in Westmoreland, where the thermometer only fell as low as 16° on the 19th, 20th, and 21st, whereas in February it was as low as 16° on the 13th, 14° on the 15th, and $13^{\circ}.50$ on the 14th, which was the lowest point it attained there.

I have made the arrangement according to the intensity of the observations. I cannot vouch for the correctness of every data; but to those which I have thought doubtful I have attached an ?, though, for any thing I know to the contrary, they are correct.

		Degrees.
Berlin	Jan. 16th	-18
Frankfort	16th	-16
Maestricht	20th	-9 $\frac{1}{4}$
Vienna	—	-9
Sheffield	20th	-5
Chiswick	19th	-4
Hampstead Heath	20th	-4
Paris	20th	-2
Greenwich (eastern part)	20th	+1
Ditto (Observatory)	20th	+2
Leicester	20th	+2
York	20th	+2 $\frac{1}{2}$
? Edge Hill, near Liverpool	20th	+4
? Kensington	20th	+4
? Clapham	20th	+5
Brussels	20th	+5
Chester	20th	+6
Buckley, near Chester	20th	+6
? Crayford	20th	+6
Chiswick	20th	+7
Near Leeds	20th	+8
Birmingham	20th	+9
Malvern	19th & 20th	+9
Bedford	20th	+10
Woodside	20th	+11
Liverpool	20th	+11
London (Royal Society)	20th	+11 $\frac{1}{2}$ nearly
Ditto (ditto)	16th	+11 $\frac{1}{2}$
? Newcastle-on-Tyne,	—	+12
Kendal	19th, 20th, & 21st	+16
Swansea	19th	+17
Ditto	20th	+18
? Bickston Gardens (Devonshire)		+18
Penzance	18th	+23
Charlottesville, North America		+24
Penzance	19th	+30
Ditto	20th	+37

These observations are all reduced to the scale of Fahrenheit, for easier comparison.

At Berlin and Frankfort the frost seems to have been very intense; it was accompanied with a heavy fall of snow, which was also experienced at Vienna. The Thames appears to have been entirely blocked up. Towards the latter end of the month there was a great quantity of floating ice in large masses in the Mersey near Liverpool, which were broken from the upper part of the river, where a passage was kept open by an ice boat, drawn by from 14 to 16 horses.

Between the 23d and 26th, severe shocks of earthquakes were frequent in the eastern part of Europe, which did much injury. The city of Bucharest seems to have been most severely visited; upwards of three hundred houses being thrown down, and sixty persons killed. In the neighbourhood of Tynehead an earthquake was felt towards the end of the month, which was so violent as to shake things off the shelves. A rent in the earth was occasioned by this phenomenon, which extended upwards of half a mile in length.

February was throughout a dull and gloomy month, with a continuance of severe frost, yet not so intense as in the previous month. Though the total mean temperature for Kendal is one degree higher than last month, it obtained a lower point by three degrees and a half on the 14th, being $13^{\circ}.50$. The frost has also been more severe in many parts of North America; at Charlotteville the thermometer was 21° lower than it was in January. Fogs have been frequent everywhere, and in some parts there have been more heavy falls of snow, which have impeded travelling to a considerable extent. Two great depressions in the barometer deserve notice; the following observations will show that they were generally felt in England.

FIRST DEPRESSION.

Birmingham	-	-	-	9th	-	28.14
Liverpool	-	-	-	9th	-	28.74
Woodside	-	-	-	9th	-	28.72
London	-	-	-	9th	-	28.65
Chiswick	-	-	-	9th	-	28.64
Greenwich	-	-	-	9th	-	28.60
Bedford	-	-	-	8th	-	29.00
Ditto	-	-	-	9th	-	29.08
Kendal	-	-	-	9th	-	28.52
Boston (Lincolnshire)	-	-	-	9th	-	28.35

Penzance	-	-	-	8th	-	28.65
Ditto	-	-	-	9th	-	28.71
Swansea	-	-	-	9th	-	28.56

SECOND DEPRESSION.

London	-	-	-	24th	-	28.68
Ditto	-	-	-	25th	-	28.80
Kendal	-	-	-	25th	-	28.44
Birmingham	-	-	-	25th	-	28.12
Liverpool	-	-	-	24th	-	28.23
Woodside	-	-	-	24th	-	28.20
Bedford	-	-	-	24th	-	28.88
Swansea	-	-	-	25th	-	28.41
Greenwich	-	-	-	24th	-	28.70
Ditto	-	-	-	25th	-	28.76
Penzance	-	-	-	24th	-	28.07
Ditto	-	-	-	25th	-	28.23
Chiswick	-	-	-	24th	-	28.74
Ditto	-	-	-	25th	-	28.79
Boston (Lincolnshire)	-	-	-	24th	-	28.64
Ditto	-	-	-	25th	-	28.52

March was very much similar to February, with a considerable increase in temperature, and prevalence of very high winds. More snow fell in some places. An aurora was seen at Liverpool on the 6th, and one at Swansea on the 19th. Many falling stars were observed on the 6th, and on the 17th a very remarkable one of large size was seen at Kensington, about ten minutes before 11 p. m., so bright as to cause the gas lamps to appear very dull. The following are extracts from the Meteorological Diary kept by Mr. Ick, of the Philosophical Institution, Birmingham. It gives the force of the wind as ascertained by the self-registering anemometer.

“ 6th greatest force 11 a. m. viz. 12lbs.

14th	ditto	5½ p. m.	8
16th	ditto	11½ a. m.	11
17th	ditto		12
20th	ditto	4 p. m.	23
20th	often		22.”

April proved very cold and ungenial, with high winds, and frequent frosts at the commencement and towards the middle of the month. Spring makes but very little appearance as yet, and the following

lines of the poet-laureate are so very applicable that the reader will excuse my quoting them.

“Thou lingerest, Spring! still wintry is the scene;
 The fields their dead and sapless russet wear.
 Scarce does the glossy celandine appear,
 Starring the sunny bank, or early green
 The elder yet its circling tufts put forth.
 The sparrow tenants still the eves-built nest,
 When we should see our martin's snowy breast
 Oft darting forth. The blasts from the bleak north
 And from the keener east still frequent blow.
 Sweet Spring, thou lingerest! and it should be so.
 Late let the fields and gardens blossom out,
 Like man, when most with smiles thy face is dress'd,
 'Tis to deceive, and he who knows you best,
 When most ye promise, ever most must doubt.”

SOUTHEY.

The high winds which have prevailed throughout the month have done much damage to the shipping of different ports, and the newspapers abound with accounts of wrecks and disasters at sea. The following is the force of the wind, as registered by the anemometer at Birmingham.

7th	greatest force		16lbs
8th	ditto		15
13th	ditto		7
15th	ditto	7½ p. m.	16
16th	ditto		11
17th	ditto	10 a. m.	14
18th	ditto		7

A dreadful hurricane was experienced in India about the 20th, so violent that strong buildings were thrown down, and large trees rooted up and carried to a great distance, and after it had abated dead bodies were found strewed about in all directions. On the 5th two strong shocks of an earthquake were felt at Genoa. A meteoric shower was observed on the evening of the 20th at Knoxville, Tennessee, North America. 154 meteors were counted by two observers, between ten o'clock that night and four the following morning. The blossom buds have been much nipped by the frosts, many being entirely destroyed. The swallow was observed in Liverpool on the 17th, and at Worcester on the 16th. From the dampness of the weather pulmonary complaints have been very common, and a good deal of illness has occurred during the month.

May was generally dry, but very cold and bleak ; the last few days in the month were milder, but a hoar frost was observed in this neighbourhood on the 14th, and at Greenwich from the 11th to the 19th ; on the 14th, 15th, and 16th, the frost was very severe, the thermometer being on these dates as low as 25° , 30° , and 29° . In other parts, however, it was not so severe, and vegetation in the country seems to be slowly progressing. The prevalence of cold winds has done much injury to the hop bines. The cuckoo was heard in this neighbourhood on the 3rd, and again on the 6th ; the blackcap was seen on the 3rd, the swift on the 4th, and the landrail was heard on the 4th. The editor of the "American Almanac" states, "the spring was uncommonly backward" in North America. June was cold and tempestuous, with high winds and very heavy rains, and on the whole must be considered a very unseasonable month. Dreadful storms and heavy rains have been frequent, occurring at different places about the same time. It is remarkable that during the heavy shower and gale which occurred here on the 18th that the barometer was rising, this was also noticed at Swansea and elsewhere. It is not less remarkable that a similar shower, though much heavier, occurred at the same time in the central part of Pennsylvania, which caused large rivers to overflow their banks, and inundate large tracts of country.

The heavy rains seem to have been most severe in some parts of Yorkshire. The accounts of them, contained in various local papers, are so long and connected that it would be difficult to make any extracts. In some instances large hailstones ("pieces of ice") accompanied these storms, and very little thunder or lightning was noticed. The winds during the month were cold and biting, so that fires in our parlours were very common. There was a hoar frost observed on Blackheath on the 9th. Towards the end of the month there was a considerable quantity of snow on the Cheviot Hills, and on Midsummer Day snow was lying two feet thick on Glencowendale-fell in Patterdale, (Cumberland,) and many other mountains in that part were clothed in their winter garments. There are bad accounts from all parts of the country respecting the appearance of the apple crops. The hop plantations also look more yellow and sickly than they did. Notwithstanding the inclemency of the weather, the agricultural reports from various districts are more favourable than might have been expected. Oats look better in Scotland and in Ireland than more southward ; barley not so well. Hay-making has commenced in the neighbourhood of Taunton, but few fields have yet been cut. The dampness of the weather seems

to be very favourable to the various species of fungi, many enormous specimens of this tribe having been met with. The most remarkable one I have heard of was found in a field near Leyland; it measured 33 inches in circumference, and weighed $3\frac{1}{2}$ lbs., and very much resembled a bladder of lard. A good deal of thunder and lightning has occurred in many places; at Strasburg, the lightning exhibited a beautiful appearance, being attracted by the conductor fixed to the spire of the cathedral. "A remarkable phenomenon was observed at Toulouse, about half-past nine on the evening of the 25th. The heat had been oppressive throughout the day, and the atmosphere became opaque, but without any appearance of a storm. In the midst, however, of the obscurity, a streak of fire, of a pale colour, rose from the horizon and was lost in the zenith. This continued at regular intervals for about $1\frac{1}{2}$ minute, alternately weak and strong, moving in a southerly direction, and parallel to the magnetic meridian." An account of a curious atmospheric phenomenon observed at Woodside on the 28th will be found in the remarks in my diary under that date.

July. The state of the weather now begins to be very serious, having been very cold and wet nearly all the month. The amount of rain has been very great, but the quantities registered in different localities are very unequal, as the following table will show :

Kendal	6.071
Rochdale	5.36
Dumfriesshire	4.93
Liverpool	3.90
Woodside	3.07
Birmingham	2.760
York	2.68
London	2.259
Bedford	2.253
Swansea	2.24
Chiswick	2.19
Boston (Lincoln)	1.64

A dreadful thunder storm visited Preston about the beginning of the month. On the 29th a shower of hail occurred at Udney, which, though of short duration, covered the high road, for half a mile or more, four inches in depth; and the general circumference of the stones was about three inches. On the 6th, about $11\frac{1}{2}$ p. m., a remarkable meteor was observed near Liverpool, by Inspector Hemer. It was of large size, and remained stationary in the air for

nearly two minutes, when emitting brilliant sparks it descended rapidly to the earth. This phenomenon, he says, was accompanied with a flash of lightning, but no thunder.

A singular refractive phenomenon was observed from Liverpool on the 5th, which will be found particularized in the remarks after the table for this month.

The hop plantations are in a very unhealthy state, and the accounts get worse and worse; indeed it seems they are now past recovery. It is the opinion of an experienced hop-grower that the produce cannot equal a tenth part of that last year. Fruit ripens very slowly, for want of sun and warm weather, and will evidently be devoid of its usual flavour. A great deal of hay is in the fields, in different parts of the country, but, should a little fine weather make its appearance, a good deal might be housed. The showery and unsettled state of the weather prevents many from cutting; this is particularly noticed in Yorkshire. Some few oats have been cut, but very little is got ready for the sickle; barley looks pretty well, wheat only middling, and is said to be a complete failure in Scotland. A very remarkable thunder shower visited New York on the 20th; the lightning set fire to many buildings, and did much damage.

August has proved nothing but a succession of cold, rainy, and changeable weather, very unfavourable to the agriculturist. The amount of rain has been considerably more than last month, as may be seen from the following table:

	Inches.
Kendal	7 630
Rochdale	6.92
Dumfriesshire	6.03
Liverpool	4.17
Woodside	4.11
Swansea	3.40
York	3.39
Boston, Lincolnshire	2 05
Birmingham	1.91
Chiswick ,	1.23
London	1.05

On the 11th, a tremendous shower of rain was experienced at Winchester, North America, which did much damage. The hop plants are a little improved, though there is not much alteration for the better. The news respecting the harvest is very gloomy, and

present prospects are anything but cheering. Oats look middling, but the wheat, barley, potatoe, and turnip crops very indifferent. The accounts from Ireland are more favourable.

Autumn seems to be fast approaching before we have had anything like summer weather. An eruption of Vesuvius commenced on the 1st, when at midday there were three streams of lava over the old pathway up the cone. The eruption kept increasing till the 4th, when it began to decrease: on the 5th, no lava flowed from the crater; on the 6th, however, it gave a slight heave, which was soon over. "Etna has also been in full activity for some time past; and Stromboli, which is always smoking, has shown more fire than usual." On the 9th p. m. there was a slight shock of an earthquake at Fiume, with several stronger repetitions; and between 8 and 9 on the evening of the 10th, a loud noise was the precursor of a shock still more violent. The bells rung, men, horses, and carriages were thrown down in the streets; walls were cracked, and the vessels in the port driven against each other. Great part of the inhabitants left the town for safety. At Bukari, three leagues from Fiume, the great tower of the cathedral was thrown down. On the 10th some shocks were felt at Trieste.

"An enormous waterspout appeared to the south west of Perth," about the beginning of the month. "After remaining stationary for about a quarter of an hour, it gradually contracted in size at the base, slowly and majestically ascending into the mass of leaden-coloured clouds with which it was surrounded."

An immense cloud of gnats was observed on the 2nd at Boudry, near Neufchatel. They presented a very singular appearance, and quite darkened the air.

A curious refractive phenomenon occurred at Dover this month, the opposite French coast being as distinctly perceived as if it had been a few miles off, and all the towns and villages on the coast seemed close at hand. An unusual number of falling stars were observed about the middle of the month, in the neighbourhood of Vienna. The following is an extract from the "Vienna Official Gazette." "At the beginning of August there was an unusual number of falling stars, though very far from that in November. On the 7th and 8th of August we counted about six in an hour; on the 9th, 15; on the 10th, 60; on the 11th and 12th, 30; and on the 18th, when it was cloudy, only 10 in an hour." I have seen similar accounts from various places, but room will not admit of my quoting particulars here. For accounts from Brussels and Geneva, I refer

the reader to the letters contained in the October Number of the "London and Edinburgh Philosophical Magazine" for 1838.

September. Though stormy about the commencement, we may say, providentially, on the whole, a very fine seasonable month, with many warm sunny days. The accounts from various parts of the country respecting the harvest are particularly cheering. The dry winds seem, however, to have been more beneficial than the sun, in ripening and drying the grain. The hay is mostly cut, and the sickle has been called into general activity, and nearly full average crops are expected to be realised in most places. Indeed the accounts from some parts of Ireland speak of the general average being likely to be exceeded. Barley only looks middling; and the same may be said of potatoes. Fruit which is ripe has not its usual flavour, being acid and much wanting in sweetness. Hop picking partially commenced about the 14th, and became pretty general about the 24th. Frosts have occurred occasionally in the nights, rather severe in some parts. A violent thunder-storm was experienced over Paris near the beginning of the month, with heavy hail showers. "The stones, many of which were *nearly* as large as a walnut, were flattish spheroidal bodies, crystallized round a well-defined central nucleus, in concentric layers." The lightning was not very vivid, but the thunder awfully loud. A tremendous waterspout visited the village and neighbourhood of Kingscourt, county of Cavan, Ireland, some time before the 26th, the consequences of which were very alarming. "The village being situated on the side of a mountain, with much difficulty resisted the overpowering torrent, which rolled from the heights with accumulated power. Several houses were deserted by their inhabitants, and left a prey to the destroying element. Cormiscea, the seat of F. Pratt, Esq. was so completely and so suddenly overwhelmed, that twenty men were required, knee-deep in the water, to keep out the flood from the parlour and drawing-room. The greatest loss, however, on this melancholy occasion, was sustained by the poor people, whose flax, hay, and corn, were indiscriminately borne down by the torrent a distance of several miles, and swept in one common mass into the lake of Ballyho."—*Dublin paper*.

It was reported that M. Walsh, about the beginning of the month, had indistinctly perceived the comet (Encke's) which makes its appearance every three years, and was to be visible about this time. The Director of the Observatory of Breslau was, however, enabled

to make some observations respecting this luminary as early as the 18th of last month.

The aurora borealis has been frequent during the month, sometimes appearing with peculiar splendour.

October. Very characteristic of the month, being generally cold and gloomy, with occasional high winds. The early part of the month was fine, so that, with some exertions, a great part of the grain was secured; but even at the latter end of the month, some remains unhoused, more particularly northward. Large flocks of Irish labourers have been passing through Liverpool, on their return home, which is a proof of the harvest being nearly ended. In Ireland the harvest is completed. In that country wheat appears to be about one-third of an average crop; the oat crop is superabundant, and barley and potatoes are, with a few exceptions, an average crop. Hops are very short of the usual produce, and inferior in quality. The fine weather, at the commencement of the month, was very acceptable. Bees have had very little success this season, in consequence of which, both wax and honey are very scarce, and fetch a high price. Many hives were entirely destroyed during the late severe winter.

A singular refractive phenomenon was observed in the atmosphere from Liverpool, on the 5th, which is thus noticed by the editor of the "Mercury:"—"The horizon, for ten or fifteen degrees, to the north and to the south of the point where the orb of day had disappeared, was illuminated by a broad blazing band of golden light, which threw the distant mountains of Caernarvon into such bold relief, that the profile of the range, and of Snowdon in the rear, was as distinct, and apparently as near to Crosby as Bidstone Hill is." The winds have occasionally been very high. The following are observations on the force of the wind, as recorded by the self-registering anemometer, at the Philosophical Institution at Birmingham.

11th greatest force at 9½ p. m. viz. 7lbs.

12th	Ditto	-	:	-	6
14th	Ditto	9 p. m.	-	-	8
15th	Ditto	4 p. m.	-	-	5
16th	Ditto	3 p. m.	-	-	12
18th	Ditto	9¼ p. m.	-	-	13½
25th	Ditto	6¼ p. m.	-	-	7½
27th	Ditto	2¼ p. m.	-	-	7
28th	Ditto	5½ a. m.	-	-	9½

On the 13th, a snow shower occurred in the neighbourhood of Liverpool; this shower appears to have been experienced in many

places elsewhere about the same time, and the fall considerable. On this date it lay a foot deep on Dartmoor. The thermometer has seldom descended below the freezing point.

November. A very dull, cloudy month, with frequent dense fogs; frosty towards the latter end, with considerable falls of snow in some places, which have not, however, been experienced here. Some grain yet remains unhoused, and even uncut; but this is so much damaged and weather-beaten, that it will never be worth the expense of cutting and housing. Snow lays on the ground a considerable depth on the Cheviot Hills; and the mountains in Cumberland are all covered. On the 23rd, the Neva at St. Petersburg was so strongly frozen as to allow passengers to cross over on foot. Severe frosts have also been experienced in Scotland.

This month has proved itself full of interest to the meteorologist, several atmospheric phenomena having been observed. I shall first mention the great numbers of falling stars which were seen about the middle of the month, throughout the whole of Europe, and probably a larger portion of the world. As the accounts of these meteors are very interesting, the reader will excuse my making a long extract or two on this subject. The following account is contained in the Vienna Gazette:—"The phenomenon of an extraordinary abundance of falling stars, about the middle of November, has been again observed this year; and, in our part of the world, more decidedly than ever. On the 10th of November, when we watched from eight p. m. to one a. m., we counted about nine such stars in an hour, the sky being rather hazy. On the 11th, during five hours after six p. m., the sky being clear, we counted about twenty in an hour; so that the phenomenon was increasing. On the 12th, the sky being quite cloudy, no observations of the kind could be made. On the 13th, the sky suddenly cleared up, half an hour before midnight, and remained perfectly serene till daybreak. During these six hours we noted 1002 falling stars, of which by far the greatest part were of the first magnitude, with a long horn of light, and casting much shadow, like the moon. The phenomenon decidedly increased from the beginning of the observations till about four a. m., when it seemed to have reached its culminating point; from that time till daybreak it decreased, as the following shows:

In 1 hour of observation there were 32 falling stars.

2	-	-	52
3	-	-	70
4	-	-	157
5	-	-	381
6	-	-	310

Unfortunately, the state of the atmosphere on the following night was such, that it did not allow any further observations; so that the duration of this remarkable phenomenon cannot be determined." About the beginning of the month a very large and brilliant meteor passed westward over the neighbourhood of Moulin, which was seen to burst into many fragments, accompanied with a loud report like thunder.

A large number of meteors were also observed from Liverpool about the same time, and were probably seen in a similar manner throughout England. The following is an extract of a letter from R. C. Woods, addressed to the "Times;" and being a full and accurate account, it will probably agree with simultaneous observations made in various parts of Britain, and suffice for the present.—"The night of the 12th of November, being the time for the periodical return of an unusual number of meteors, I determined to leave London, on account of the obstruction buildings offer in this crowded city, to locate myself in the delightful village of Richmond, Surrey, for the purpose of observing the annual return of this remarkable phenomenon. In the afternoon of the 12th the sun sunk below the horizon as to predicate a clear night. When below the horizon there was a grand display of a rich profusion of red, orange, and rosy coloured hues. The wind blew fresh from the N.N.E., and the night was, in consequence, very cold. At 10 hours 13 minutes p.m. (clock time) a meteor, without train, fell from the star Lyra, and took its direction across the Milky Way. At 11 hours 48 minutes a large meteor with train fell from Cassiopeia, and crossed the Milky Way at an angle of near 90 degrees. From 12 o'clock (midnight, 12th) till 3 hours 25 minutes on the 13th, nine meteors fell, crossing the galaxy at angles of from 70 to 80 degrees: six were without trains, and three with trains. I now began to despair of witnessing the 'grand display, seen in former years; recollecting, however, on some occasions, the 'shower' did not commence till near four o'clock, I continued to direct my attention to the N.N.E., whence the greater number of meteors had fallen. At three hours thirty-five minutes nothing could exceed the beauty and grandeur of the heavens; from E.N.E. to N. meteors fell like a shower of bomb shells in a bombardment, and in such rapid succession as to defy every attempt to watch their particular direction and course among the stars, or to ascertain their number. The whole visible heavens were illuminated by the light such a prodigious number of meteors diffused in their descent towards the earth, and a more beautiful and magnificent sight cannot possibly be con-

ceived. At three hours fifty-five minutes the 'shower' ceased, and after four o'clock all traces of meteors were gone; the stars, however, shone without diminution in number or brightness, and the atmosphere was remarkably clear. The total number of meteors could not have fallen short of from 400 to 500, the *maximum* number at three hours forty-five minutes. We may therefore conclude the 'meteoric shower' was equal in interest and splendour to any of a former year."

Showers of meteors were also observed at Paris, Geneva, Manheim, Padua, Petersburg, Frankfort, Breslau, Wetstein in Germany, and probably many other places. The aurora borealis has often been noticed. The splendid solar halo, (a phenomenon of rare occurrence), which was seen here on the 6th, must also be mentioned.

Near the middle of the month, a smart shock of an earthquake was felt at Constantine in Algiers. A similar shaking was also experienced in many places in Wales about the same time, though probably unconnected. It was very calm at the time, and a rumbling noise like distant thunder was heard.

There was a very remarkable depression in the mercurial column on the 28th and 29th. We had not as much rain or wind in this neighbourhood as might have been looked for as accompanying so great a depression, but it appears in some places the storms were very severe. This was particularly the case in Ireland, and in the south of England. The "Plymouth Journal" of the 29th says, "We experienced a most terrific gale to-day." I have seen many similar statements, with which local papers abound. The following is a list of the lowest points of depression observed at this time.

Kendal	-	29th	28.06
York	-	29th	28.43
Liverpool	-	29th	28.23
Woodside	-	29th	28.20
Birmingham	-	28th & 29th	28.00
London	-	28th	28.64
Ditto	-	29th	28.67
Edinburgh	-	28th & 29th	27.90
Lancaster	-	29th	28.12
Newcastle	-	29th	28.03

Very high winds were experienced at Birmingham on the 28th and 29th, the self-registering anemometer indicating a pressure of 23lbs on the former, and 21½lbs on the latter date.

December. Though a few frosty nights have occurred, the month on the whole may be considered to have been a very mild one. As a proof of this, I saw a primrose in an exposed situation in full flower on the 23rd. Dull and gloomy weather have prevailed, and as far as meteorological phenomena are concerned, it has been a month of little interest. Falling stars have occasionally been observed, and halos and coronnæ have been of frequent occurrence. A very fine aurora was seen from Liverpool on the 11th. Several unusual solar spots have been observed, one of which was of large dimensions, which might be discerned with the naked eye. As an additional proof of the mildness of the season, I may state that the bees in our garden have been very lively. I have often observed them on sunny days, flying about the entrance of the hives.

ERRATA.

Page 6 line 17 from top, for *Dub um* read *Dubium*.

10	19	-	-	<i>S.</i> read <i>T.</i>
14	9	-	-	<i>seape</i> read <i>scape</i> .
16	17	-	-	<i>r</i> read <i>i</i> .
17	8	-	-	1129 read 1829.
21	30	-	-	<i>quadrangalum</i> read <i>quad-</i> <i>rangulum</i> .
26	14	-	-	<i>Apinn</i> read <i>Apion</i> .
29	1	-	-	<i>procumbrus</i> read <i>procum-</i> <i>bens</i> .
30	bottom line, dele the word <i>is</i> .			
89	8	from bottom, for <i>Lemina</i> read <i>Lemna</i> .		
95	13	-	-	<i>G.</i> read <i>J.</i>

OMISSIONS.

CROCUS NUDIFLORUS. Naked flowering Crocus. Oct. 22

About a mile and a half from Liverpool, on the road to Allerton. *Mr. Shepherd in With.*

FRAXINUS EXCELSIOR. Common Ash. April, May. 12

Woods and hedges, common.

R. THOMPSON, PRINTER,
LITTLE JAMES STREET, GRAY'S INN LANE.



376254

Hall, T. B.
A flora of Liverpool...

Bot
Flora
H

**University of Toronto
Library**

**DO NOT
REMOVE
THE
CARD
FROM
THIS
POCKET**

Acme Library Card Pocket
LOWE-MARTIN CO. LIMITED

